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MARCH-APRIL 2002



Coalition Logistics

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COVER

Operation Enduring Freedom demonstrates once again the crucial role that coalitions play in U.S. military operations. The article beginning on page 8 examines the need to improve logistics with coalition partners, some of whom lack U.S. technology, funding, and infrastructure. On the cover, soldiers from Denmark—one of our better prepared partners—check an M1A1 Abrams tank at Camp Dobol in Bosnia.

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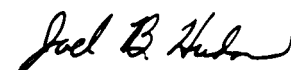
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A LOG NEWS

SINGLE STOCK FUND EXTENSION TO DIVISION ASL LEVEL PLANNED

The Army plans to start converting to Milestone 3 of the Single Stock Fund (SSF) this summer at Fort Hood, Texas. The conversion will begin with a verification of initial operating capability (VIOC) involving the 1st Cavalry Division, the 4th Infantry Division (Mechanized), the 13th Corps Support Command, the Fort Hood Directorate of Logistics, and selected Reserve component units.

Under Milestone 3, the division authorized stockage list (ASL) inventories will be converted from operations and maintenance (O&M) funding to the Army Working Capital Fund-Supply Management Army (AWCF-SMA) account. Direct support and reparable exchange items initially will remain O&M-funded but will be converted to the AWCF-SMA at some future point. Prescribed load list (PLL) inventories and shop stocks will remain O&M-funded.

Milestones 1 and 2 were implemented in April 2001. Milestone 1 consolidated wholesale, theater, corps, and installation AWCF-SMA inventories into a single fund. Milestone 2 extended AWCF-SMA downward to incorporate O&M redistributable stocks above the division ASL level.

Contingent on successful execution of VIOC events, a decision by the Army leadership on extending Milestone 3 to the rest of the Army is expected in October.

DA HEADQUARTERS TRANSFORMED

A major reorganization of Department of the Army (DA) Headquarters announced by Secretary of the Army Thomas E. White in December will extend the Army Transformation to the highest levels of the service. According to Secretary White, the reorganization will "centralize and clean up the lines of authority where there have been too many cooks in the stew."

The biggest change will align Army Staff directorates with the Army Secretariat. The Secretary observed, "No successful corporate headquarters in the world today is organized the way we are . . . We currently have

two separate staffs, often performing some of the same or similar functions." To streamline DA Headquarters and improve the decision-making process, the head of each directorate will become the military deputy to the corresponding assistant secretary of the Army. The Deputy Chief of Staff for Logistics, for example, will align with the Assistant Secretary of the Army for Acquisition, Logistics, and Technology. The staff heads also will be renamed G1 through G8; the Deputy Chief of Staff for Logistics will become the G4. These changes will allow the Secretariat and the Army Staff to function as a unified staff while maintaining their separate identities as required by law. The realignment also will reduce staffing levels, which will permit the transfer of military personnel spaces to the field.

The reorganization also will centralize responsibility for installation management under the Army Staff. Garrison commanders will report to one of eight regional directors, who in turn will report to the Assistant Chief of Staff for Installation Management. This change will eliminate major Army commands from installation management and allow them to concentrate on their primary missions.

The realignment will be implemented this summer. A review of Army organizations below the headquarters level should be completed this spring.

EDGEWOOD ENZYMATIC DECON SYSTEM UNDER DEVELOPMENT

Researchers at the Edgewood Chemical Biological Center in Maryland are developing a powder with enzymes designed to neutralize nerve agents and biological threats such as anthrax.

Adding water to the powder creates a formula that can be used to decontaminate vehicles and other surfaces following a biological or chemical attack, says Dr. Joseph DeFrank, a biological researcher who has been working on the solution for 17 years. DeFrank and the Army have patented one of his enzymes—organo phosphorous acid anhydrolase—designed to neutralize G-type nerve agents such as sarin.

The Edgewood team is experimenting with other

(News continued on page 40)

Weapons of Mass Destruction and the Joint Rear Area

by Lieutenant Colonel Rodney G. Davis, ALARNG

Editor's note: The following article was written before the tragic events of 11 September and does not deal with issues of homeland security. It presents the author's ideas for improving force protection against weapons of mass destruction in the joint rear area. The thoughts expressed are those of the author.

Combat support (CS) and combat service support (CSS) soldiers in the joint rear area face a different but no less lethal threat than the warfighters they support. The reason is that our adversaries will use all available means, which could include weapons of mass destruction, to disrupt our command and control and logistics nodes. But are we prepared for a weapons of mass destruction incident in the joint rear area?

Before we can answer that question, we first must look at what constitutes a weapons of mass destruction (WMD) incident. It is true that the U.S. military is not devoid of WMD response capabilities in the joint rear area. However, I believe that, in the absence of a trained, dedicated group of specialists, those capabilities are limited.

Joint Publication 1-02, DOD [Department of Defense] Dictionary of Military and Associated Terms, as amended by JMGTM-085-97, offers this definition of WMD—

In arms control usage, weapons that are capable of a high order of destruction and/or being used in such a manner as to destroy large numbers of people. Can be nuclear, chemical, biological, and radiological weapons, but excludes the means of transporting or propelling the weapon where such means is a separable and divisible part of the weapon.

Many would argue that few of our potential adversaries are capable of introducing a company-sized or larger force into the joint rear area. However, our adversaries do possess the ability to infiltrate in small teams,

to energize terrorist or local guerrilla elements, and to deliver WMD or conventional ordnance with the intent of disrupting CSS operations within the joint rear area.

Development of the Joint Rear Area

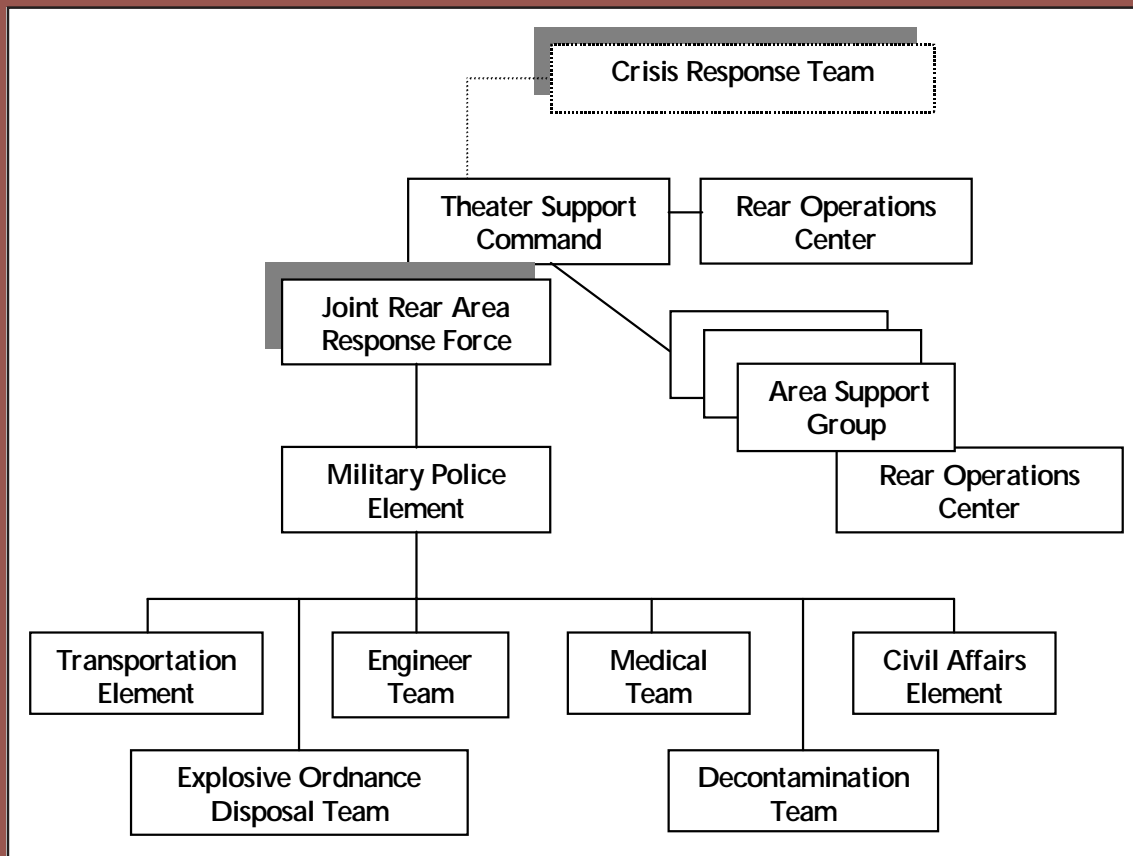
To understand force protection in the joint rear area, we must review the basic configuration of that area. The joint force commander may select a joint rear area coordinator from one of the participating services or delegate the responsibility to a subordinate commander, such as the commander of the theater support command (TSC). The geographic size and scope of the area of responsibility or theater and the level of the threat normally will determine who is delegated the mission of joint rear area protection.

The TSC and area support group (ASG) are responsible for establishing bases and base clusters throughout the joint rear area. As combat forces move through an ASG's area of operations, they are assigned to bases for support and force protection. When these forces are prepared for onward movement, they displace to their assigned tactical assembly areas.

As the reception, staging, onward movement, and integration of forces are completed and the theater matures, CS and CSS elements likely will be the major tenants in the joint rear area's bases and base clusters. As the CS and CSS forces move forward to support the warfighters, the bases will remain operational. Many bases will be intermingled physically with large urban areas, especially in and around seaports and airports of debarkation and embarkation.

Force Protection Deficiencies

As the Army moves toward reshaping logistics doctrine to support the Revolution in Military Logistics, we must address the force protection realities of the joint rear area as it supports a wide range of conflicts and near-conflicts. Current doctrine, as addressed in Joint Publication 3-10.1, Joint Tactics, Techniques, and Procedures for Base Defense, identifies three threat levels, along with response actions for each level. Under doc-



□ The structure of a notional joint rear area response force.

trine, the forces anticipated in the joint rear area are adequate to defeat any one of these threat levels with quick-response forces, to include the deployment of a tactical combat force. However, responsive actions for WMD incidents, as defined in JP 1-02, are not addressed in JP 3-10.1.

In a major regional conflict, the TSC commander likely will have a chemical brigade in the joint rear area. According to Army doctrine, this brigade will have 4 chemical battalions with up to 25 companies. The companies will have chemical and nuclear reconnaissance, smoke, and biodetection capabilities. While most of the brigade will focus on recovery from an attack (decontamination), a key responsibility of the chemical headquarters will be to assess the likelihood of a WMD event. This assessment capability should be an integral part of a dedicated team that supports the TSC commander.

Dedicated intelligence analysis and counterintelligence capabilities also are critically needed assets be-

cause the joint rear area's intelligence requirements normally are a low priority for theater intelligence resources compared to the warfighter's needs. Although the Army has enormous signal, technical, imagery, and measurement and signal intelligence capabilities, nothing to date can take the place of humans as intelligence agents.

Because of these deficiencies, force protection conditions are difficult to determine, and interdiction can be almost impossible to accomplish. Similarly, coordination with host nation intelligence collection and analysis resources also is limited, which can hamper civilian and military responses to joint rear area threats. As a result, area damage control teams from base and base cluster tenant units will be unprepared to deal with WMD incidents.

Dedicated Augmentation

As threat forces increase their WMD delivery capabilities against U.S. and allied forces and infra-

Augmentation	Functions
Intelligence cell	Intelligence collection and analysis
Civil affairs element	Host nation coordination and advisers
Military police element	Force protection and civil-military coordination and preempt capability
Nuclear, biological, chemical element	Nuclear, biological, chemical assessments and decontamination
Explosive ordnance disposal team	Explosive ordnance disposal adviser
Host nation liaisons	Coordination with local law enforcement and intelligence agencies
Joint service liaisons	Service-specific capabilities
Communications-electronics cell	Communications-electronics support
Medical team	Medical assessment support team

❑ **Notional augmentation for a TSC crisis response team.**

structure, our ability to prevent or respond to such crises must grow. Despite this increased threat, the TSC commander's resources available to respond in the joint rear area are limited. Whether the joint rear area coordinator is placed at the service component level or responsibility is delegated to the TSC commander, the TSC commander requires additional capability in the form of a dedicated augmentation. This is particularly true because the geographic size of his area of responsibility may stretch hundreds or thousands of miles.

A potential solution is to establish a dedicated crisis response team augmentation capable of dealing not only with WMD threats but also with other situations, such as noncombatant evacuation operations, catastrophic environmental destruction, or extremely critical hostage rescue operations.

Joint Publication 3–07.2, Joint Tactics, Techniques, and Procedures for Antiterrorism, outlines a detailed antiterrorism program. It notes—

To meet the terrorist threat, an integrated and comprehensive antiterrorism program must be developed and implemented at every echelon of command. The program is designed to foster a protective posture in peacetime . . . that will carry over to wartime environment.

The program described in this publication could be used as a model platform for a crisis response team augmentation to the TSC commander. The chart above shows a notional crisis response team organization. The team would serve as the joint rear area response force command and control element, thereby allowing the TSC rear operations center (ROC) to continue with its force protection responsibilities.

The addition of a joint rear area response force (see chart above) provides the TSC commander with a preemptive capability as well as a responsive organic element to manage WMD and other incidents within his area of responsibility. Without this augmentation, the Army will have to consider developing a deployable table of organization and equipment (TOE) response team.

Doctrinal developments, force structure changes, frequent deployments, and future threats require a realistic and practical review of unit organization, mission capabilities, survivability, and the integration of our deployment force structure. Future deployment packages will be joint in nature, smaller in size, and more specialized to execute specific missions. As we seek to incorporate technology enhancements, we must understand that the scope of the threat to the joint rear area has changed. Just as we seek to develop the right force mix to combat WMD incidents in the United States with our homeland security initiatives, we must embrace the challenge of joint rear area force protection against WMD as we restructure our forces for the future.

ALOG

Lieutenant Colonel Rodney G. Davis, ALARNG, is the Security, Plans, and Operations Officer of the 226th Area Support Group, Alabama Army National Guard, in Mobile, Alabama.

Rear Operations in the 1st Corps Support Command

by Captain Margaret H. Pratt

In March 2001, the XVIII Airborne Corps at Fort Bragg, North Carolina, participated in a warfighter exercise known as Operation Dragon Comet. To prepare for the exercise, the corps conducted a workshop in September 2000 to familiarize personnel involved in corps rear operations with current doctrine. Experts were brought in from Fort Leavenworth, Kansas, to teach the fundamentals of rear area doctrine to the key leaders and staffs of the corps' units. Once these corps leaders were familiar with the doctrine, they would be able to help subordinate commanders plan and prepare for the exercise.

At the workshop, the commander of the Headquarters Command, which is referred to locally as the "Dragon Brigade," introduced the staff of the corps rear area (CRA) units to the personnel of the corps rear command post (CRCP) and explained the CRCP structure. The corps Deputy Commanding General (DCG) is the rear area commander, and his Chief of Staff is the commander of the Dragon Brigade. The 139th Rear Operations Center (ROC), a North Carolina Army National Guard unit from Raleigh, comprises the operations and intelligence cells, while the rear operations center commander is the G3 Rear. The rest of the CRCP is made up of personnel from the corps staff sections and liaison officers from various units in the CRA.

As the largest unit in the CRA, the 1st Corps Support Command (COSCOM) is a key player not only in sustaining the corps but also in aggressively conducting rear operations in the CRA. The four functions of rear operations are sustainment, movement control, security, and terrain management. The sustainment mission is assigned to the 1st COSCOM commander, who is the senior logistician in the corps. The 330th Corps Movement Control Battalion, a specialty battalion assigned to the 1st COSCOM, is responsible for movement control in the CRA and for all nontactical moves in the corps area of operations, culminating in the coordination and publication of a movement program every 12 hours. The clearly drawn lines of responsibility end there.

RAOC-Corps Support Group Relationship

Doctrinally, a corps has several rear area operations centers (RAOCs), which are Reserve component units specifically designed to assist with managing and coordinating rear operations. Typically, each division has one RAOC to assist with its rear operations, while a corps has from two to five.

Because of his concern for security and counter-reconnaissance during the exercise, the DCG placed the RAOCs in a direct-support relationship with each corps support group (CSG). Since the corps commander had used a military police (MP) battalion as the tactical combat force, the security forces in the CRA were limited. Each RAOC functioned as a separate staff cell for each CSG commander and focused purely on rear operations, while the CSG organic staff performed its wartime combat service support mission.

Because of this task organization, it was possible to establish a habitual relationship between the Reserve component RAOCs and the Active component CSGs that would facilitate future training and planning. By placing the RAOCs in a direct-support relationship to CSGs, the DCG could hold brigade-level commanders responsible for seeking out and eliminating the enemy in their assigned areas. Since each RAOC commander is a lieutenant colonel and the CSG and corps separate brigade commanders are colonels, the direct-support relationship made sense. The relationship worked, thanks in large part to the flexibility and doctrinal expertise of the RAOCs.

1st COSCOM's Role

Because of its size and area of responsibility, the COSCOM can provide the CRCP with current situational awareness for the CRA. To understand how the 1st COSCOM can improve battlefield situational awareness, it is important to look at the framework used.

Each CSG requested the space it needed to perform its mission. These areas were made into logistics support areas. Then the other units in the CRA requested

space within those logistics support areas. Once all of the units were situated in the CRA, the CRCP determined the CSG areas of responsibility. Each unit was located within a CSG area of responsibility, which was commanded and controlled by the CSG commander, with the assistance of the assigned RAOC. Large areas with no units were identified as CRAs. The 16th Military Police Brigade was responsible for the security and terrain management of those areas.

The COSCOM G2, with the assistance of the Corps G2 and 16th Military Police Brigade S2, then conducted a thorough intelligence preparation of the battlefield for the CRA. Once named areas of interest (NAIs) were identified and approved, each CSG and RAOC developed a rear operations plan.

The first order of business was to develop base defense plans. The CSG commanders arranged the units in their areas of responsibility into bases and base clusters. Bases generally had from two to six company-sized units, while a base cluster contained two to five bases. The CSG commanders also selected major subordinate commanders (at the brigade level) to be base cluster commanders, responsible for base-defense reaction forces within their clusters. Once the groups consolidated their plans, they forwarded an overlay and cartoon sketch to the 1st COSCOM G3 Rear Operations Section to be included in the overall COSCOM base defense overlay.

The CSGs also produced detailed reconnaissance and surveillance plans, which ensured that they had positive control over the NAIs in their areas of responsibility. In addition, a counter-reconnaissance plan was used to seek out and destroy the enemy before he could interfere with the sustainment of the corps. Both of these plans were given to the COSCOM G3 Rear Operations Section. Through discussions with the CRCP staff, the COSCOM G3 Rear Operations Section was able to integrate other available CRA assets, such as OH-58D Kiowa helicopters and AC-130 gunships, into the overall 1st COSCOM rear operations plan.

Traditionally, the mission to seek out and destroy the enemy in the CRA has been part of the security mission given to the corps MP brigade. However, the MPs were not staffed to defend all of the ground in the CRA while performing convoy security, site security, traffic control, and other security missions. Therefore, it was essential for every unit to take proactive force protection measures to seek and find the enemy, as well as provide their own security. The counter-reconnaissance patrols ensured that the enemy did not gain access to the life support areas of friendly units. In fact, the counter-reconnaissance plan worked so well that our base defense plans rarely were tested. When they were, the reaction

forces in the CSG area of responsibility were able to respond more quickly (because of proximity, plans, and rehearsals) than the MPs could.

By identifying and using the CSGs' combat power, the 1st COSCOM provided convoy security for convoys that were not critical enough for MP support (or when MP support was not available). It was heartening to discover that our units are able to protect themselves without degrading mission accomplishment.

Updating the Corps Rear Operational Picture

Due to life support and technological equipment requirements, the CRCP and the 1st COSCOM Tactical Operations Center (TOC) were located adjacent to each other for Operation Dragon Comet. This physical proximity proved to be the most important factor in the success of corps rear operations.

The corps DCG and the CRCP Chief of Staff attended the 1st COSCOM Commander's rear operations update briefing twice a day in the COSCOM TOC. The briefing was conducted around a map board and included updates from the COSCOM G2, the COSCOM G3 Rear Operations Officer, and the COSCOM Chemical Officer. A representative of the COSCOM Engineer section and the Movement Control Battalion also briefed when necessary. These briefings provided clear guidance straight from the DCG and presented a detailed picture, through the use of map overlays, that was not possible with technological tools.

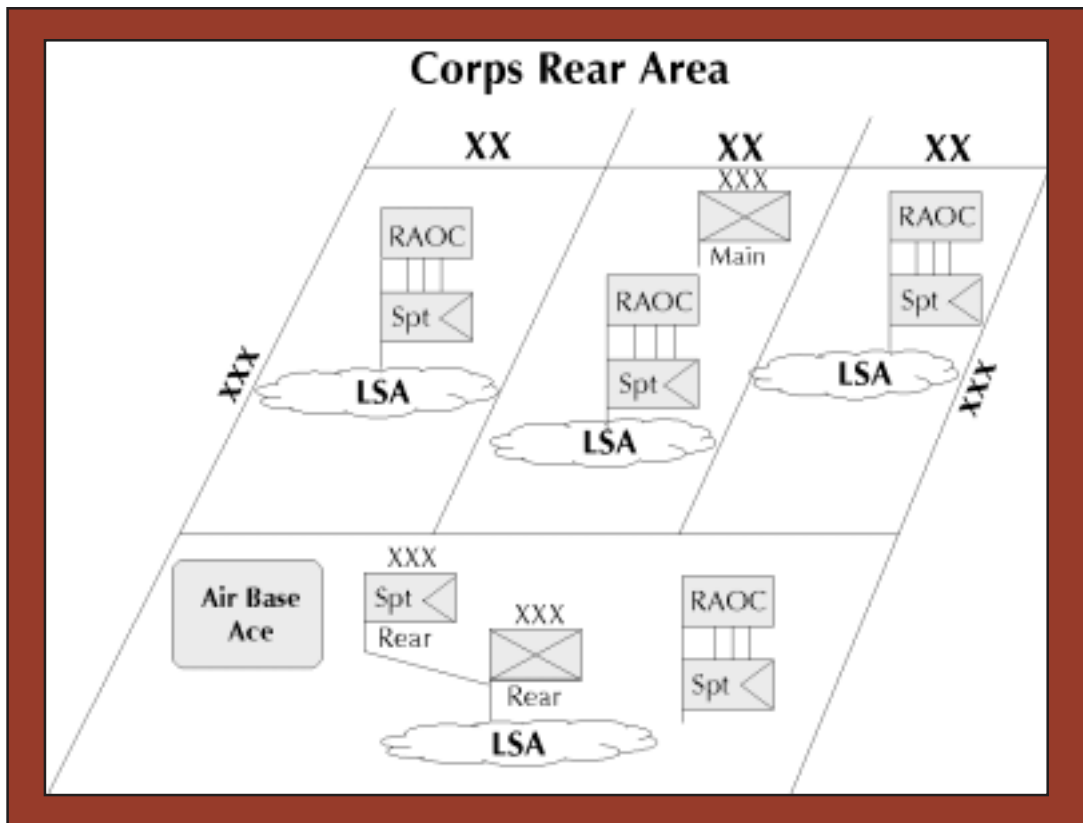
Several times a day, the DCG also received updates from his own staff in the CRCP that focused more on specific unit missions. Instead of fostering competition between the CRCP and COSCOM staffs, these updates actually increased communication and coordination efforts. The result was two staffs whose work complemented each other for a common, precise mission.

Relationship With Combat Service Support Units

The COSCOM TOC was collocated with the CRCP, the 44th Medical Brigade, and the 18th Soldier Support Group. This enabled the COSCOM commander to integrate all of the combat service support for the corps. The proximity not only aided in sustainment but also facilitated coordination among all of the rear operations functions. This coordination significantly contributed to the success of the XVIII Airborne Corps during Operation Dragon Comet.

Planning: Key to Success

The XVIII Airborne Corps, and particularly the CRA, performed flawlessly during Operation Dragon Comet. Their performance is even more noteworthy because this was the first time the XVIII Airborne Corps had under-



□ The framework used for the corps rear area, with rear area operations centers (RAOCs) directly supporting corps support groups (CSGs) in the logistics support areas (LSAs).

gone a warfighter evaluation. Undoubtedly, the success of the operation was due to detailed planning conducted well in advance. In fact, the most important lesson learned from the exercise was that sufficient time must be allotted for planning. The entire operations and intelligence cell of the CRCP is manned by Reserve component personnel who do not have the opportunity to participate fully in the lengthy, detailed planning. Therefore, the corps staff had to allocate resources directly to the CRCP during the planning process. Rear operations usually are relegated to second priority behind the operational mission of the unit. However, it is not possible to carry out the operational mission of the corps unless rear operations are conducted successfully.

Rear operations doctrine is purposely vague. Far too many factors influence rear operations to be able to define them specifically. Commanders must be trusted to use their judgment and decide the best way to execute missions. They can shape rear operations based on mission, enemy, terrain, troops, time, and civilians to guarantee their operational success.

During Operation Dragon Comet, the 1st COSCOM Commander, with a great deal of coordination with the

corps and higher headquarters staffs, successfully planned and executed the sustainment mission. The 330th Corps Movement Control Battalion executed movement control in the CRA and all nontactical moves in the corps area of operations using detailed meetings with the CRCP staff, Corps G4 transportation experts, and MP representatives. Every unit in the CRA executed security and terrain management functions. The CRCP served as the mediator when conflicts arose, but the CSGs, with the aid of their RAOCs, were able to execute skillful terrain management, security, and counter-reconnaissance. The framework developed and used proved to be a highly effective model. **ALOG**

Captain Margaret H. Pratt is the Commander of the 42d Military Police Detachment at Fort Bragg, North Carolina. She previously served as Rear Operations Officer, G3, for the 1st Corps Support Command at Fort Bragg. She is a graduate of the U.S. Military Academy.

Finding the Friction Points In Coalition Logistics

by Colonel Patrick J. Dulin, USMC

Winston Churchill is reputed to have commented during World War II that the “only thing in war worse than having to fight with allies is having to fight without allies.” In the same terrible conflict, General Omar Bradley observed, “Logistics were [sic] the life-blood of the allied armies.” Thus we find two great war leaders telling us that coalitions are essential in war and that logistics is pivotal to any coalition’s success.

History tells us, then, that “coalition logistics,” or “multinational logistics,” is essential. Yet many today complain that coalitions in general, and coalition logistics in particular, are simply too hard to manage. I do not question the fact that conducting coalition logistics is hard. Even Churchill, in the quote above, acknowledged that alliances are difficult. The point is that the benefits of coalitions, and coalition logistics, far outweigh the challenges they pose. But even as we embrace those benefits, we must work continually at improving coalitions by identifying and correcting any problems we encounter. We need to find the major friction points that can inhibit coalition logistics and develop ways to alleviate them.

In examining coalition logistics, we need to ask four straightforward questions—

- What is coalition logistics?
- Why is coalition logistics important today?
- Where do we apply coalition logistics?
- How can we improve coalition logistics?

Armed with the answers to these questions, we can develop some recommendations to remedy the problems we uncover.

What Is Coalition Logistics?

To answer this question, we first must recognize that the term “logistics” can be defined very broadly. For our purposes, we will narrow our focus to “applied logistics” and follow the definition in the Integrated Logistics Support Handbook, which divides applied logistics into two phases—

Phase 1 (commonly referred to as acquisition logistics) includes everything that is done to plan and acquire support before a system is delivered to the user. Phase 2 (commonly referred to as tactical/operational logistics) includes the things that are done to support the system while it is being used.

The handbook notes that actions occurring during phase 1 dictate how well a system will be supported during phase 2.

Why Is Coalition Logistics Important Today?

Quite simply, coalition logistics is not just an anomaly of the past, nor is it some distant wave of the future: It is here and now. Both the current National Security Strategy and the National Military Strategy demand engagement with potential coalition partners. Depending on the region of the world, the National Security Strategy also demands that we enlarge the number of our potential coalition partners, such as by expanding the North Atlantic Treaty Organization (NATO) to include former Warsaw Pact members. Coalitions, along with the logistics that supports them, have been part of our operations over the last 10 years, in places as diverse as Somalia, Kosovo, and East Timor.

So the need for and the use of coalition logistics already exist, but, frankly, we have not been especially adept at meeting the challenge. Accordingly, Joint Vision 2020, the Department of Defense (DOD) roadmap for the future, states that—

Since our potential multinational partners will have varying levels of technology, a tailored approach to interoperability that accommodates a wide range of needs and capabilities is necessary. Our more technically advanced allies will have systems and equipment that are essentially compatible, enabling them to interface and share information in order to operate effectively with US forces at all levels. However, *we must also be ca-*

The United States increasingly relies on coalitions in military operations. But not all coalition partners have the technology, funds, or logistics capabilities to work well with U.S. forces. How can we improve interoperability and burden-sharing with potential allies?

pable of operating with allies and coalition partners who may be technologically incompatible—especially at the tactical level. Additionally, many of our future partners will have significant specialized capabilities that may be integrated into a common operating scheme. [Italics added.]

In short, coalition logistics must be executed with the ultimate goal of enabling a combined joint task force or any combined force to quickly organize effective logistics support for all participants.

Where Do We Apply Coalition Logistics?

The answer to this question is literally all over the world and throughout both phases of applied logistics. We have applied coalition logistics in acquisition by using development partnerships with allies in many equipment programs (such as the AV-8 Harrier jet and the D-5 missile). We have applied tactical and operational logistics in support of coalitions, such as in East Timor and Kosovo. To portray where we apply coalition logistics, we need to describe how coalition logistics is used in the two phases of applied logistics.

Using Coalitions in Acquisition Logistics

In phase 1—acquisition logistics—we find that, while the acquisition process permits the use of international partnerships, the focus on supporting coalition logistics is at best indirect. To understand the reasons for this, we need to look at both DOD's broad guidance and the details of how that guidance is interpreted and implemented. Change 1 to DOD Directive 5000.1, The Defense Acquisition System, sets forth a broad goal for international acquisitions that focuses on interoperability: "Interoperability within and among United States forces and U.S. coalition partners is a key goal that must be addressed satisfactorily for all Defense Systems."

Similarly, the Secretary of Defense amplified DOD policy in a 1997 memorandum, stating that "DOD must achieve as a minimum—

- Deployment and support of common, or at least interoperable, equipment with potential coalition partners; and,

- Leverage of U.S. resources through cost sharing and economies of scale."

DOD guidance focuses on the broad goals of achieving interoperability and saving money. However, much specific direction on how to implement those broad goals comes from organizations outside DOD, such as the Congress, the Department of State, and the Department of Commerce.

The International Armaments Cooperation Handbook summarizes much of this guidance. It describes an extraordinary number of challenges that must be overcome in creating international acquisition partnerships. For example, in drafting a contract for an international acquisition, the responsible program office must—

- Determine the type of contracting to use, such as Foreign Military Financing or Foreign Military Sales.
- Make appropriate notifications to the Congress.
- Comply with the Buy American Act.
- Comply with applicable international trade agreements, such as the Trade Agreements Act, the General Agreement on Tariffs and Trade, and the North American Free Trade Agreement.

- Be ready, if required, to consult with the International Trade Administration in the Department of Commerce.

If this sounds very complicated, that is because international acquisition partnerships *are* extremely complicated and cumbersome. Yet, despite the many complications created by supplementary requirements and the longer time schedules generally needed to complete international acquisitions, the incentive for pursuing these programs remains very strong. The greatest incentive is the economies of scale generated by additional purchases from allies, which result in cheaper per-unit costs.

All of this does not mean that there is no specific in-

centive for achieving coalition interoperability in non-international acquisitions. An example of such an acquisition would be an Army equipment program in which no international partner is contributing funds, but the Army wants its equipment to be interoperable with the equipment of potential coalition partners. The incentive in this case is the mandate that all operational requirements documents must include an interoperability key performance parameter. However, the flaw in this incentive is that only limited standards are available for use as metrics in developing the key performance parameter. These limited standards, combined with a lack of international partners participating in the specific acquisition (in other words, no coalition stakeholders), leave requirement approval authorities with no choice but to default to existing limited standards from more sophisticated allies, such as NATO standards, or service-developed standards, such as the American-British-Canadian-Australian Armies Standards.

The resulting character of acquisition logistics therefore is biased toward wealthier, more sophisticated allies. That inhibits acquisition logistics from directly supporting the Joint Vision 2020 goal of being “capable of operating with allies and coalition partners who may be technologically incompatible—especially at the tactical level,” or from directly supporting the National Security Strategy goals of engagement and selective enlargement. Accordingly, acquisition logistics support of coalition logistics is diffuse and at best indirect.

Using Coalitions in Tactical/Operational Logistics

During phase 2 of applied logistics (that is, tactical and operational logistics), there is a great deal of direct support, but it can be characterized as ad hoc. This ad hoc nature is driven both by U.S. policy, which states that logistics is the national responsibility of a coalition partner, and by the varying levels of sophistication of regional logistics support agreements. Even for sophisticated partners of a long-standing alliance, trying to sort out logistics responsibilities can remain an ad hoc activity, as we learned with NATO partners in Bosnia. This ad hoc nature is not a phenomenon confined to coalitions in which the U.S. participates; United Nations (U.N.) operations experience the same difficulties.

To understand why coalition logistics normally is conducted in an ad hoc fashion, we first must understand the reasons for choosing to use a coalition. In brief, the reasons for choosing a coalition instead of a unilateral operation include the following—

- Intheater coalition partner forces may be physically closer to the operating area than U.S. forces, thereby

allowing the operation to move faster (for example, Australians in East Timor).

- Intheater coalition partners can offer cultural insights and skills in the operating area not possessed by U.S. forces.

- Intheater coalition partners can share burdens (primarily in risks to combatants) and costs, thus making the operation cheaper.

- Coalitions can be used across the spectrum of operations.

However, since coalition operations can occur at any time, the rapidity of response required currently works at cross purposes with the efficiency rationale for establishing the coalition in the first place. Apportioning burden-sharing, in particular, is time consuming and conflicts with the goal of achieving a faster response, as precious days are spent negotiating who will pay for what logistics services and how reimbursement among parties will occur. Numerous instances of squabbling over minutiae when accounting for costs have impacted the effectiveness of coalitions in the past.

Such apportionment difficulties do not mean that coalition partners want all logistics functions to be assumed by one party for provision to all other parties. Certain functions (for instance, mortuary affairs and end item replacement) are inherently unique to individual nations and will remain as national functions. Burden-sharing is aimed at improving efficiency only in shared common logistics functions. Yet coalition members often introduce redundant logistics capabilities when they cannot reach an agreement rapidly on how to share assets; they then deploy those redundant assets into a theater in order to meet response-time goals.

Complicating the situation further is the frequent inability of coalition partners to share pertinent logistics information rapidly. Coalition command and control procedures and equipment frequently are cobbled together hastily in response to a crisis. It is as a result of this hasty command and control setup—combined with uncertain, evolving, or redundant burden-sharing responsibilities—that tactical and operational coalition logistics most frequently assumes its ad hoc character.

In the hectic organization and execution of such ad hoc coalitions, the commander may fail to achieve the “faster, better, cheaper” goals for which the coalition was formed. The commander may attain two of the three (perhaps faster and better), but the current processes driving the coalition’s ad hoc character often will not allow him to achieve all three. Accordingly, coalition logistics, while effective, has remained consistently inefficient.

How Can We Improve Coalition Logistics?

How can we make this better? Let's start by looking at phase 1 of applied logistics, acquisition logistics, and then phase 2, tactical and operational logistics, and in the process identify the friction points.

Acquisition logistics. Friction occurs, but is limited, in acquisition logistics. The one major friction point in acquisition is the lack of an advocate to push coalition interoperability in programs for which the U.S. Army has no international partners contributing funds. In the absence of an international participant in a program, the only option is to use existing standards developed for more sophisticated and wealthy allies to approximate required interoperability. Complicating this dilemma is the simple fact that no one set of standards (such as NATO standards) can represent the requirements of all potential coalition partners effectively. Coalition partners' requirements most often are reflected in a narrow, regional interoperability focus; for example, potential coalition partners from a tropical area will have little need for interoperability with equipment under development for cold weather operations. Furthermore, even for a single region, a program cannot accommodate every potential coalition partner. There simply is not that much discretionary funding available in any program. Thus, the managers of an acquisition program require even greater discernment to identify those countries that are the most likely future coalition partners within any one region (in other words, a regional priority scheme).

In short, the present acquisition logistics process simply does not provide a coalition advocate to identify an intraregional priority of potential coalition partners and to identify interoperability standards for poorer coalition partners.

In order to alleviate this friction point, I recommend that the regional commanders in chief (CINCs) assume the role of interoperability advocates for potential coalition partners within the acquisition logistics process. To implement this recommendation, the regional CINCs need a mechanism that will empower them to discharge an advocacy role. I believe this mechanism should consist of delegating to the regional CINCs limited funding in the form of Foreign Military Financing Program credits. These credits would be used to finance the pairing of the interoperability requirements of potential coalition partners with specific equipment systems, either to purchase the system outright for the potential coalition partner or to modify the interoperability key performance parameter to reflect standards that will allow interoperability with the partner's existing systems.

The CINCs could reinforce their advocacy role fur-

ther by making logistics interoperability a targeted goal in their respective Theater Engagement Plans (TEPs). Since the TEPs already are coordinated with the Department of State, targeted interoperability could be increased greatly by focusing Department of State regional expertise and attention on specific coalition logistics interoperability issues.

Only the regional CINCs possess the regional focus and relationships (interaction with regional Department of State officials and potential coalition partners) to act as successful advocates in assisting the program managers in aligning the acquisition logistics process with the goals of Joint Vision 2020.

Tactical and operational logistics. In contrast to the single main friction point of acquisition logistics, multiple examples of small impediments are apparent in tactical and operational logistics. However, when we stand back and look at tactical and operational logistics, I believe we will see that there are just two main friction points.

The primary friction point is the lack of a uniform, exportable set of command and control equipment and procedures with which to organize a coalition's logistics at the outset of an operation and to manage logistics in the conduct of the operation. Fortunately, there is a champion in the joint arena who is addressing this key shortfall. That champion is the U.S. Pacific Command (PACOM).

PACOM is developing a mechanism that will make it "capable of operating with allies and coalition partners who may be technologically incompatible." This effort is the Contingency Theater Logistics Advanced Concept Technology Demonstration (CTL ACTD). The CTL ACTD addresses "the inability to share accurate logistics information with coalition partners for the full spectrum of military operations" and strives to "improve coalition logistics automation interoperability" through "information fusion" of "asset visibility" and "multinational collaboration" while simultaneously providing a methodology for "process re-engineering." The milestones for the CTL ACTD are—

- Fiscal year 2001: Requirements determination and concept of operations development.
- Fiscal year 2002: Systems development for coalition asset visibility and decision support tools.
- Fiscal years 2003 to 2004: Test and evaluation leading to a Military Utility Assessment.
- Fiscal years 2005 to 2006: Transition to national systems.

Through the "information fusion" mechanism, the CTL ACTD also addresses concerns that the concurrent

Joint Vision 2020 goal of developing focused logistics (that is, “pull” logistics) for U.S. forces could derail logistics cooperation with potential coalition partners who rely on an “iron mountain” (or “push” logistics) philosophy.

Currently, Thailand, Australia, and the United States are participating in the CTL ACTD. PACOM’s staunch advocacy role for potential coalition partners as a regional CINC is critical to the success of CTL ACTD. By developing a mechanism that enables potential but less sophisticated partners to participate in coalition operations, PACOM enables formerly disenfranchised countries to effectively lend support.

Essentially, PACOM’s example constitutes my recommendation to alleviate the command and control friction point by exploiting lessons learned from the CTL ACTD and by further expanding the CINCs’ roles as advocates for potential coalition partners in their regions.

The secondary main friction point in tactical and operational coalition logistics is apportioning burden-sharing liabilities for funding. Whenever countries discuss money, even in crisis situations, their operational momentum immediately slows. The U.S. policy that logistics is a national responsibility can effectively dissuade potential coalition partners from volunteering to participate in an operation. In the case of U.N. coalition operations, the U.N. Field Activity Logistics Directorate indicates that even the U.N.’s reduced level of burden-sharing has dissuaded poorer nations from participation in coalition operations. Complications resulting from negotiations on burden-sharing can produce really poor decisions, such as a case in East Timor documented in a PACOM Coalition Logistics Process Survey—

Because our NCA [National Command Authorities] would not fully engage in its support for East Timor, there were many occasions when we could have provided that theater level shot in the arm for the ADF [Australian Defence Force] and failed to do it. A specific example was that we had an MPF [Maritime Pre-positioned Force] ship in Australia conducting an exercise at the time East Timor occurred. It would have been a simple thing to float that ship to East Timor, stretch a hose across the beach and fill the ADF fuel farm to a million gallons of JP8. This could have been accomplished in under 10 days at the most. We were not allowed to do this, and as a result the ADF ran continuous flight ops with Blackhawk helicopters slinging 500 gallon bladders from ship to shore in an effort to build it’s fuel reserve.

So what is the recommended solution to untangle this Gordian knot? Frankly, my recommendation is to cut through the initial obstacles of negotiating burden-shar-

ing by having the United States pay for the first 30 days of logistics support for all participants while waiving requirements that logistics remains a national responsibility during the same 30 days. This would provide time to negotiate long-term arrangements, allow the CINC to craft both an efficient and effective combined joint task force (for example, by reducing redundant capabilities among the participants), and provide a more rapid overall response.

I recognize that this is not a particularly palatable solution in an era of fiscal retrenchment throughout DOD. But consider that our potential coalition partners are ready to share the rigors of combat with us as comrades in arms, thus potentially paying their portion of the burden with the lives of their young men and women. Having the United States front initial logistics costs seems a reasonable price to pay to alleviate this friction point.

My recommendations for alleviating these three major friction points—lack of an advocate to push coalition interoperability; lack of a uniform, exportable set of command and control procedures and equipment with which to rapidly organize a coalition’s logistics; and lack of a mechanism for allocating burden-sharing liabilities for funding—revolve around two central themes. One is increasing the involvement of regional CINCs; the second, and more difficult, is obtaining additional funding for burden-sharing. In essence, I recommend enhanced time and money commitments to coalition building.

If we are faithful in these commitments, maybe future generations of allies will be able to paraphrase Churchill by saying, “Only one thing in war is worse than having to fight it, and that is having to fight it without the United States as your ally.” **ALOG**

Colonel Patrick J. Dulin, USMC, is the Program Manager for Anti-Terrorism/Force Protection Equipment at the Marine Corps Systems Command at Marine Corps Base Quantico, Virginia. He has an M.S. degree in systems management with a major in logistics from the University of Southern California. He has extensive experience in coalition logistics, including service as C/J3 of the Combined Forces Command in Korea and as G3 of the 1st Marine Expeditionary Force.

Continuous Change Management

by Lieutenant Colonel Al Wilson, USA (Ret.),
and Lieutenant Colonel Rod Tozzi, USA (Ret.)

On 15 December 2000, Army Materiel Command (AMC) Headquarters was awarded its International Organization for Standardization (ISO) 9001:2000 certification for the provision of Continuous Change Management® (CCM) services. As such, it became the first Army entity to be certified to the new standard. Efforts are underway to certify other processes within the Systems Management and Readiness Support Office, which provides the CCM services. While the ISO certification itself would be sufficient to warrant publication of an article, it is the CCM process that is the subject of this one.

CCM represents the first true integration of military campaign planning and industry-standard change management tools and techniques. This unique merger forms the first integrated systems approach to getting ahead of and managing change.

Continuous Change Management

The great constant in the universe is change; it will happen whether we want it to or not. Therefore, we must manage change, or it will manage us. AMC's CCM process is a systems approach to change management. It uses industry-standard tools and techniques to help organizations identify where they are, where they want to go, and how to get there.

CCM Theory

Single approaches to change management target specific areas of an organization for improvement. While effective in the areas for which they are designed, these single approaches are insufficient for managing change across an entire organization. CCM's integrated approach is designed to manage change across the breadth and depth of the organization.

Often, changes made in one area have second- and third-order effects in other areas. These effects often cause more problems than the original issue the organization intended to solve. Moreover, in our zeal to restructure the system or do things faster, better, and

cheaper, we often overlook people and the impact of change on them. Employees naturally resist change they do not understand. This resistance often can lead to the failure of an effort to implement new and different ways of doing business.

CCM is designed to overcome the limitations of single approaches. Using tools and techniques from a variety of methodologies, trained CCM guides help individuals and organizations understand the challenges they face and generate options to solve the problem that range from improved efficiency to redesign and restructure of a paradigm. CCM also helps organizations build and execute implementation plans and then monitor and track metrics to determine how well the system is performing. By controlling the CCM process, the guides set the conditions for harnessing and optimizing the intellectual capital of the organization so that the organization can develop its own solutions. In this way, the guides own the process, the client organization owns the problem and the product, and the organization's employees provide the intellectual capital to solve the problem or improve the product and implement solutions.

How CCM Works

CCM is designed as a systemic approach to change management. The diagram above provides a broad view of how CCM works. The CCM model is based on the four Ps used in Creative Problem Solving (CPS) developed by the Creative Problem Solving Group-Buffalo, as modified by *Continuous Change Management (C2M), Inc.* To implement lasting and dynamic change, leaders must consider the impact of change on the four Ps: people, processes, products, and "press" (climate, culture, and environment). Let us examine each of these in detail.

People. To be effective, any change system must account for how people interact with others, gather information, make decisions, and solve problems. This information provides indicators that correlate significantly with job selection, reaction under stress, conflict

management, and learning and teaching preferences. CCM guides use a number of tools to help people understand themselves, understand how others perceive them, and determine how to use this knowledge to maximize team performance.

CCM guides are trained in a number of psychometric tools including, but not limited to, the Myers-Briggs Type Indicator and the Kirton Adaption-Innovation Inventory. Each tool can be used alone or in an integrated fashion to provide detailed information and feedback on personality preferences and problem-solving styles for individuals and the team.

Process. This refers to the processes people perform during the course of the normal workday. The issues here, of course, are how well the processes are performing and how they can be improved or redesigned to meet the changing needs of the organization. The intent is to baseline the system and understand what can be kept, what can be modified, and what can be thrown away. Understanding the processes gives employees a foundation from which to make change.

The CCM guide uses tools and techniques that allow anyone to understand and build processes without relying heavily on statistical analysis. Using the Knowledge Based Management® (KBM) version of Six Sigma developed by Air Academy Associates of Colorado Springs, Colorado, the CCM guide emphasizes development of process flow charts and cause-and-effect diagrams to describe pictorially and improve existing processes or to design entirely new processes. Computers are used for heavy statistical computations when needed. [Six Sigma is a measure of quality in an organization. It is achieved through a Six Sigma methodology, which is based on implementing data-driven improvement projects.]

In the CCM model, the area of intersection between

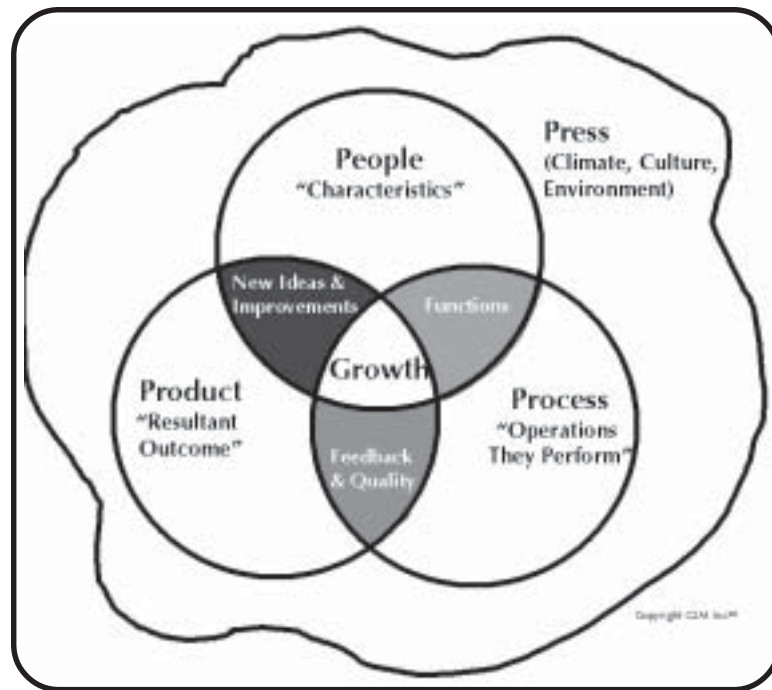
people and process is functions. People run processes, and processes are grouped into functions. Multifunctional teams break down traditional functional stovepipes. These teams require each member to have a complete understanding of the interaction of each function within the team and the organization. Understanding

the key functions within the organization allows the team to focus quickly on the key process changes needed in areas such as new training requirements, policies, structure, and job requirements and to determine the impact of those changes on people. The CCM guide can help multifunctional teams identify the few key processes from the many trivial ones, or he can help them focus on and develop innovative processes needed to meet new requirements in the business environment.

Product. The third

P is product. The product can be transactional, productional, or both. It is the result of people and process. Where process and product overlap is the focus of quality efforts. This is refining a process to reproduce consistently a service or product at high standards of quality. Traditionally, this area has been the home of the Total Quality Management, Six Sigma, and ISO 9001 quality improvement programs. In most cases, these methodologies are overlaid onto the business strategy. In the CCM approach, new products and services are designed with quality in mind. Quality becomes the backbone of the business strategy, as opposed to something overlaid onto the strategy. CCM guides help organizations refine and integrate existing quality processes into the business strategy or develop new processes based on a quality approach.

Where product and people intersect in the CCM model is the realm of option development. These options include ideas designed to improve existing products or ideas that result in new products or ways of doing business. This intersection is essential to the future growth



□ The elements of Continuous Change Management.

of the organization. CCM guides use CPS to help teams generate and identify the most promising options. KBM then is used to refine the options and begin turning them into improved or new products or services.

Press. Press is short for pressure. The term “press” is used because it describes the context within which people, process, and product operate. It is the environment, both internal and external to the organization, that presses in on and out from the organization.

Press also encompasses the climate (observed patterns of behavior of people within the organization) and culture (values and belief system of the organization). We distinguish between culture and climate because cultures require tremendous effort and time to change. For example, it has taken Jack Welch over 19 years to transform General Electric and its culture from predominantly manufacturing to the transactional and service-based company it is today.

Climate, on the other hand, is the result of behavioral patterns we see in organizations. Climate acts as the filter between leadership and productivity. Climate is changed more easily. Think about the United States and how elections change the climate of the country. Understanding the relationship among leadership, climate, and productivity is key to developing a creative climate.

Research by PricewaterhouseCoopers shows that companies with deliberate processes for managing the organizational climate, using inclusive leadership, and developing a creative climate are successful at turning new ideas or options into successful products and sustaining growth. CCM guides use various climate assessment tools to measure the creative climate within an organization. Analysis of the climate provides the organization’s leaders the ability to improve productivity, increase job satisfaction, promote calculated risk-taking behavior, and reduce conflict.

Growth

CCM is a systemic approach to change management. The area where people, product, and process intersect is growth—more specifically, market growth. Done correctly, a CCM approach to change enables all facets of

the system (people, process, and product) to grow and survive within the context of press. The growth includes people (new skills, better communications, less conflict, high performance teams), process (coordinated continuous improvement, determination of impact on people), and product (faster, better, cheaper or new innovations) and increases in the probability of market-share growth.

Conversations with employees and senior leadership from several companies, ranging from General Electric to one-person consulting firms, suggest that an integrated approach to change management is necessary for business survival. To survive, organizations must capitalize on their people as well as their processes and infrastructure. CCM can help organizations learn from yesterday’s mistakes and successes, survive the pace of business today, and anticipate and meet the challenges of tomorrow.

CCM Strategic Components

CCM is composed of three elements—

- A strategy that includes campaign planning, CPS, KBM, and ISO 9001:2000.
 - An implementation vehicle, which is the focus of improvement or replacement upon which CCM is used.
 - A training program such as the Journey to Education, Development, and Innovation (JEDI). This program teaches an individual to execute the CCM strategy. The training has three levels—apprentice, knight, and master—and takes approximately 19 months to complete (including practicums).



□ CCM strategic components.

KBM

Six Sigma forms the basis of the KBM tools used in CCM; however, the emphasis is not on statistical calculation. The KBM approach to Six Sigma is a methodology that provides businesses with the tools to identify and improve key processes and reduce waste using low statistical complexity. Most of what the CCM guide will do is based on—

- Asking the right questions and understanding the process flow for that activity.
- Determining the constant, noise, and experimental variables affecting the process.
- Writing standing operating procedures (SOPs) to

hold constant variables constant.

- Conducting failure modes and effects analyses to help build system robustness against noise variables.
- Using design of experiments (DOE) to optimize the system.

SOPs become the work procedures and policies used in ISO 9001:2000 to ensure the system can meet or exceed customer requirements and expectations consistently. Control/run charts and other process control methods are executed using Statistical Process Control (SPC) Keep It Simple Statistically (KISS®) and DOE KISS software. The KISS software is commercial-off-the-shelf and is very easy to use. The KBM approach says 75 to 80 percent of data analysis and knowledge development can be garnered using low-order statistical analyses. Of the remaining 20 percent, 15 percent can be handled using the software, and 5 percent requires a statistician.

Additionally, KBM is a way to reduce conflict by allowing the data to speak. Data analysis results provide a more factual basis for decision-making than an intuitive or experiential approach. KBM is not a replacement for individual thought, nor should it be the sole basis for making decisions. However, it does provide a way to interrogate a system or process and allow the data to tell us how well the system is performing against the established standard.

CPS

CPS is based on 50 years of research in the field of creativity. The approach used in CCM is based on work done by the Creative Problem Solving Group-Buffalo and the Creative Problem Solving Institute. CPS provides a framework for solving problems that need new and innovative solutions. CPS is not magic but a delib-

erate process for igniting the creative potential of the individual or team. CPS is about thinking out of the box.

CCM provides consultations and training in the use of CPS tools and techniques. The CCM guide uses many CPS tools that help teams to understand the challenges they face, define and frame the problem, and then use divergent thinking to generate a variety of options quickly. This is followed immediately by convergent or critical thinking to separate the promising few options from the trivial many possibilities and develop action plans to begin implementing the ideas. KBM helps refine and effect ideas and options developed during the CPS process.

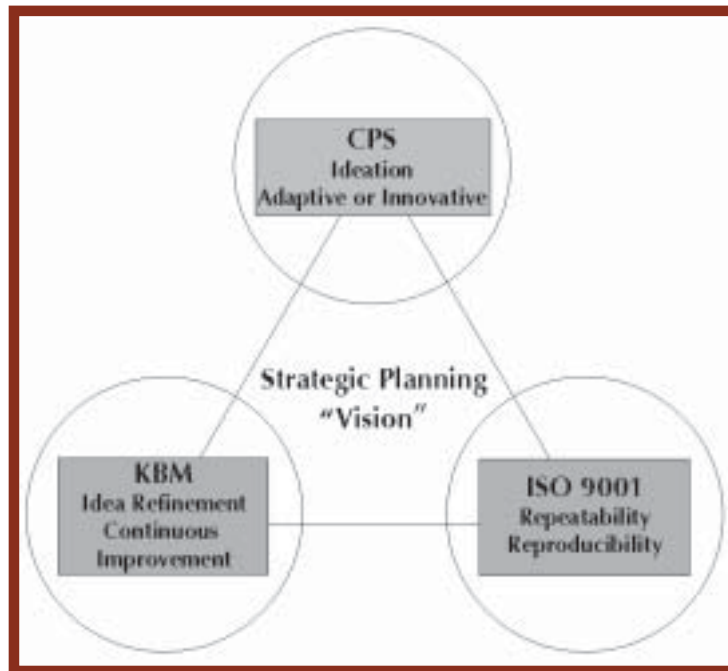
ISO 9001:2000

ISO is the framework used to ensure consistently reproduced products and services of high quality. This is not to say that an organization must become ISO-certified

(although we do recommend it). However, the organization needs to apply the concepts embedded within the ISO standard. The key elements of the ISO certification process include a management review, a requirement for continuous improvement, and documentation of work procedures. Standing operating procedures developed during idea refinement (using Six Sigma approaches) meet ISO documentation requirements and become the work procedures for implementing the new system.

Campaign Planning

Campaign planning is identifying where the process is and where it needs to go. Campaign planning is the foundation of the road map to the future. Using principles outlined in *The Art of War* by Sun-Tzu and *The Lost Art of War* by Sun Bin, plans are developed that identify the who, what, when, where, why, and how of



□ CCM uses a combination of management methods to control changes within an organization.

achieving the vision developed by the senior leaders.

CPS, KBM, and ISO 9001:2000 tools and techniques are integrated into the development of a campaign plan, and the campaign plan provides the basis for deciding which CPS, KBM, and ISO 9001:2000 tools and techniques will be applied to an intervention. This shows that CCM constitutes a more circular than linear approach to thinking and problem solving. A fundamental tenet of CCM is that the solution of one problem provides us with opportunities to solve other problems or exploit the resulting positive scenario.

The key during campaign planning is to ensure that the natural tension that develops between the vision and the current reality moves the current reality toward the vision as opposed to moving the vision toward the current reality. Research indicates that often the vision is sacrificed because the leaders have not articulated the vision of the new reality well enough to gain the commitment of management and the workforce. This results in the reduction of the vision to mere efficiency improvements in the current reality.

During campaign planning, we can gain commitment by helping the workforce to understand the vision and answer the question, "What's in it for me?" from both organizational and individual viewpoints. Aligning the answer to that question to the organizational vision increases the probability that the organization will be successful in achieving the desired end.

Team Building and Climate Assessment

Before decisions can be made, leaders must understand the differences in how people gather information, make decisions, and solve problems. The assumption that people think alike is wrong. Using tools like the Myers-Briggs Type Indicator and the Kirton Adaption-Innovation Inventory, we can demonstrate the differences in people's personality types and problem-solving preferences.

Both tools are statistically reliable and valid. By combining these tools, we can reduce the forming, storming, norming, and performing stages of team development from 4 to 6 months to a week. The benefits of using the tools include reduced team conflict, improved interpersonal communications, and an increased level of team performance.

The preferred method of using the personality inventories is during the course of real-world team problem solving. Real-world problem solving provides a greater opportunity to demonstrate the differences in how people gather information, solve problems, and make decisions. If time is not an issue, the organization then can conduct

workshops designed specifically for the Myers-Briggs Type Indicator and Kirton Adaption-Innovation Inventory. Outcomes of the workshops include a better and deeper understanding of individual personality styles and preferences, how those preferences affect workers' perceptions of each other, and how to use type and problem-solving preference to enhance team performance.

We also can assess the organizational climate using the Situational Outlook Questionnaire (SOQ), which was created by Creative Problem Solving Group-Buffalo. The SOQ measures nine critical elements required for establishing a creative climate: challenge and involvement, freedom, trust and openness, idea time, playfulness and humor, conflict, idea support, debate, and risk taking. Many companies have used the SOQ to improve the climate of their organizations. Innovative companies score higher in areas of risk taking, trust, and openness and demonstrate significantly less conflict than do stagnant companies. Using SOQ, we can help organizations create an internal climate that leads to greater employee satisfaction and productivity.

The tools mentioned in this article are only a small sampling of the entire suite of tools used within each component. CCM provides a comprehensive suite of tools to help leaders at all levels manage change and tailor training to the level of personnel involvement.

Lieutenant Colonel Al Wilson, USA (Ret.), is an onsite systems acquisition coordinator for Camber Corporation. He is a co-developer of the Continuous Change Management Program. He is certified to administer the Myers-Briggs Type Indicator and the Kirton Adaption-Innovation Inventory and is a certified Six Sigma Master Black Belt, a Creative Problem Solving facilitator, and a certified ISO 9001:2000 auditor.

Lieutenant Colonel Rod Tozzi, USA (Ret.), is the Chief of the Program Management Support Office of the Army Materiel Command. He is a co-developer of the Continuous Change Management Program. He is certified to administer the Myers-Briggs Type Indicator and the Kirton Adaption-Innovation Inventory and is a certified Six Sigma Master Black Belt, a Creative Problem Solving facilitator, and a certified ISO 9001:2000 auditor.

Forming USAREUR's Echelons-Above-Corps Logistics Backbone

by Helmut Haufe and Richard D. Woodworth

The General Support Center-Europe (GSC-E), headquartered in Kaiserslautern, Germany, operates the theater logistics sustainment base. As an integral part of the 21st Theater Support Command, GSC-E forms the backbone of echelons-above-corps general support (GS) and military industrial operations logistics for U.S. Army Europe (USAREUR).

Centers of Excellence

Over the past several years, GSC-E has developed one-stop GS supply, maintenance, and unique logistics services to support theater operations. All seven company-level organizations assigned to GSC-E are certified under the International Organization for Standardization (ISO) 9002 quality management standards and provide unique and specialized services or products.

- **Maintenance Activity Kaiserslautern** optimizes technical expertise and infrastructure and provides GS maintenance capability for tracked and wheeled vehicles and their components.
- **Maintenance Activity Pirmasens** specializes in GS communications and electronics maintenance and sheet metal and shelter repair.
- **Maintenance Activity Mannheim** provides a unique GS capability in fire control and supports deep maintenance (refurbishment) of engineer equipment, wheeled vehicles, and components.
- **Maintenance Activity Vilseck** provides direct support maintenance for the 7th Army Training Command and expert services in small arms, tracked and wheeled vehicles, and allied trades for Army units in training. Maintenance Activity Vilseck's GS maintenance capability supports repair of tracked and wheeled vehicles and components.
- **Base Operations Maintenance Center Wuerzburg** provides unique supply and maintenance support for installation property and commercial equipment at 22 locations throughout the theater. The center also executes the U.S. European Command's Humanitarian Assistance Program.

• **Supply Activity Kaiserslautern** is the focal point for theater redistribution and retrograde operations for classes II (general supplies), III (packaged) (petroleum, oils, and lubricants), IV (construction and barrier materials), VII (major end items), and IX (repair parts). The Supply Activity Kaiserslautern infrastructure supports hazardous materials operations and meets both host nation and U.S. regulatory requirements for hazardous materials handling and storage operations.

• **Mannheim Laboratory Center** provides Army Oil Analysis Program and material testing support for the U.S. European Command area of operations.

Fleet Refurbishment

To create a workable balance between the Army's vision of skipping a generation of hardware and sustaining legacy systems for an additional 15 or 20 years, the 21st Theater Support Command implemented the Theater Fleet Refurbishment Program (TFRP). TFRP has much in common with the Army's Recapitalization Program. While the Recapitalization Program calls for rebuilding equipment to a zero-time, zero-miles standard and may include reliability improvements, TFRP restores vehicles to technical manual -10/-20 preventive maintenance checks and services standards. TFRP also repairs any deficiencies identified while the work is being performed. The benefits associated with TFRP are higher readiness, extended service-life, improved reliability, greater safety, and lower operating and maintenance costs.

GSC-E is the theater's executive agent for the TFRP. TFRP includes 18 systems, and work is performed cooperatively through organic and contract maintenance operations. The program provides over 1,081 refurbished end items to USAREUR soldiers annually.

Contract Management

The Logistics Contract Management Office, a staff element of the GSC-E, executes contract management functions for all USAREUR maintenance contracts that

exceed \$50,000. GSC-E established the office to increase buying power and implement uniform quality standards by centralizing the management and visibility of maintenance contracts. This resulted in significant cost savings and a reduction of administrative lead-time in processing contractual requirements.

Adopting a new business approach to provide European contractors with a source for repair parts, the Logistics Contract Management Office initiated an association with Extended Reach Logistics, Inc. (e-RL). As an e-commerce business, e-RL is designed to support Department of Defense equipment readiness across all of the military services. The company has a specific team that focuses on USAREUR's needs. This complementary commercial service provides an alternative method for logistics personnel to evaluate repair parts' prices and their availability from qualified sources. To avoid production delays, repair parts with long lead times in the Army wholesale supply system sometimes are purchased commercially. (This is done only as a last resort, when needed parts cannot be obtained quickly through the Government wholesale supply system.) The business-to-Government portal is available free to the registered user via the secure e-RL Internet site.

Retrograde and Storage Operations

Supply Activity Kaiserslautern's retrograde and storage operations continuously average an in-theater customer wait time of less than 7 days. With a monthly transaction volume of over 60,000 receipts and shipments, the redistribution effort alone saves the Army more than \$56 million over a 12-month period. An additional \$40 million worth of supplies is sent to installations in the continental United States annually. To sustain readiness in the forward area during the Balkan deployments of Task Force Hawk and Task Force Falcon, the storage activity prepared and shipped critical life support pallets and constructed and configured the shipment of multiple air lines of communication pallets.

By participating in the Army's Single Stock Fund and national maintenance initiatives, GSC-E returns over 6,023 rebuilt components to the Army inventory annually while sustaining readiness within USAREUR.

Because of its close alliance with the Army Materiel Command, GSC-E was called on to apply driver's hatch interlock modifications to M1A1 Abrams tanks and to retrofit the up-armored high-mobility, multipurpose, wheeled vehicle fleet in USAREUR.

On any given day, GSC-E returns at least three refurbished major end items to the theater, repairs and returns 106 components, and provides more than 1,800 organizational clothing and individual equipment items to units. It stores and maintains ready-to-use life sup-

port materiel for 5,000 soldiers and maintains 53,000 sets of chemical defense equipment in a ready-for-use-and-deployment configuration.

With proactive quality assurance teams that respond to customers within 48 hours, GSC-E consistently achieves a product-quality satisfaction rate of higher than 99 percent.

Initiatives

Recognized as a Department of Defense reinvention laboratory, GSC-E is inserting sophisticated technology solutions that give the user control of many logistics component functions. To improve logistics operations at the Base Operations Maintenance Center Wuerzburg, GSC-E purchased and modified a commercial off-the-shelf system to support the unique maintenance and acquisition requirements of supporting commercial Army equipment.

The Installation Maintenance Management System automates production control, with emphasis on obtaining and controlling commercial nonstandard equipment and repair parts. From the shop floor, employees can input hours worked on a work order and review the status of repair parts requisitions. A production-control system providing similar features for maintenance of tactical equipment has been developed under the functional guidance of GSC-E as a module fully compatible with, and later to become part of, the Global Combat Support System-Army.

As the source of echelons-above-corps GS services in USAREUR, GSC-E is essential to maintaining the force. By providing high quality, innovative theater-support services, GSC-E helps save the Government money while it keeps the Army ready to fight. **ALOG**

Helmut Haufe is the General Manager of the General Support Center-Europe in Kaiserslautern, Germany. He holds a degree in civilian law from Saarbrücken University in Germany and a computer science degree from the Central Data Institute in Saarbrücken.

Richard D. Woodworth is the Chief of Logistics Management in the Logistics Operations Directorate of the General Support Center-Europe. He holds a B.S. degree in business and management from the University of Maryland and an M.S. degree in management information systems from Bowie State University.

Lessons Learned From the Taszar Staging Base

by Major James J. McDonnell

As the United States prepares for what is expected to be a sustained war against terrorism, there will be a pressing need for access to intermediate staging bases (ISBs) to conduct operations effectively. The ISB concept is not new. During World War II, U.S. forces used Great Britain as an ISB, and Japan served a similar purpose during the Korean War.

Although not totally applicable to the current situation, the lessons learned by the Army from its use of an ISB in Taszar, Hungary, should be instructive for future operations.

Why Taszar?

In December 1995, elements of U.S. Army Europe (USAREUR) based in Germany deployed to Bosnia and Croatia to enforce the General Framework Agreement for Peace in Bosnia and Herzegovina (commonly known as the Dayton Peace Accords). In order to mitigate the considerable ground distance from Germany to the Balkans, the Army needed a facility close to the theater of operations at which to prepare before deploying into Bosnia and Croatia. Although this particular ISB mission, unlike its wartime predecessors, was a peacekeeping operation, it was no less essential to mission accomplishment.

It is important to define an ISB. In its "Technical Report: Intermediate Staging Base Concept," Science Applications International Corporation proposes this definition: "An intermediate staging base is a tailorable, secure, command and control, combat support, and combat service support staging, support, and sustainment base and transportation node established by the Joint Force Commander and located near, but not in, the theater area of operations." The village of Taszar in southwestern Hungary clearly was all of these things.

As Army and Air Force planners developed their deployment strategy, they selected Taszar and the much larger, neighboring town of Kaposvar, which has a population of about 70,000, as the ISB location. The Taszar-Kaposvar site met a number of key criteria, as Major Timothy J. Marshall detailed in an article in the September-October 1999 issue of *Army Logistician*—

- A multinodal transportation hub where road, rail,

and air transport converged with an airstrip that could accommodate strategic aircraft such as C-5s and Boeing 747s.

- A significant but under-utilized Hungarian military infrastructure that included barracks, airfields, and a large ammunition holding area.

- A site within 1,000 nautical miles of Tuzla, Bosnia, the theater area of operations, which is the rule-of-thumb distance for establishing an ISB

- Adequate electrical and communication grids.

- A supportive populace and a government that was applying for membership in the North Atlantic Treaty Organization (NATO).

- A reasonably secure area that would minimize force-protection requirements.

- A large pool of English-language speakers.

The history of the Taszar ISB can be divided into three distinct periods.

November 1995 To October 1998

During the first 2 months of the Taszar ISB's operation, over 25,000 soldiers belonging to the U.S. component of the Implementation Force (IFOR) flowed through Taszar. The ISB mission was to ensure the successful reception, staging, and onward movement (RSO) of these forces before their deployment to an uncertain operational environment in Bosnia. However, it became apparent that the peacekeeping mission, which originally was predicted to last 1 year, would continue indefinitely. Consequently, Taszar was the location from which continental United States-based units such as the 1st Cavalry Division deployed into the theater to assume Stabilization Force (SFOR) responsibilities in Bosnia.

As the Bosnian theater matured during this period, there was a decreased dependence on temporary engineer-built bridges, increased rail traffic to Bosnia, and greater use of pre-positioned equipment. In October 1998, Tuzla Airfield was opened to strategic air traffic. These actions, plus a reduction in personnel from 18,500 to 6,900 at Task Force Eagle (as the U.S.-led component of SFOR was named), diminished the need for the Taszar ISB. This led to four "right-sizing" actions, which significantly reduced the number of leased facilities and

trimmed the uniformed Army population at the ISB. (The U.S. Air Force remained in Taszar until September 2000, when it turned over air traffic responsibilities to Department of Defense [DOD] civilians.)

November 1998 to March 2001

Although the RSO mission diminished during the second phase of the Taszar ISB's history, the base still had a number of responsibilities. One was providing combat service support to DOD military and civilian personnel within Hungary, Croatia, and Bosnia (less those that were part of Task Force Eagle). Another responsibility of the ISB was establishing and executing force protection measures for all units and personnel who were assigned or attached to the ISB, were tenants of the ISB, or were under its operational control. A third responsibility was conducting base operations at all assigned facilities. Base operations included supporting over 1,000 personnel spread over 10 locations. Among those locations were—

- A base support battalion at Camp Butmir in Sarajevo.
- A Defense Energy Support Center office in Split, Croatia.
- SFOR headquarters in Zagreb, Croatia.

Despite the increased use of pre-positioned equipment, rotary-wing aircraft still were deployed to the theater by ship. Therefore, Taszar-based medics and military police supported the semiannual redeployment and deployment of U.S. forces assigned to SFOR duty at the Croatian port of Rijeka, which was run by the 21st Theater Support Command and the Military Traffic Movement Command.

An unexpected mission of the ISB was providing joint support to the 31st Marine Aircraft Group during Operation Allied Force in the spring of 1999. This prompted a host of interservice support agreements on the use of the ISB ammunition holding area to accommodate non-Army munitions, use of the airfield, and force-protection responsibilities. This type of support soon became the norm. The Taszar ISB was the site of two Navy aviation exercises with the Hungarian Air Force in 2000, and ISB-based contractors also supported the exercises of two Marine Expeditionary Units in Croatia during the year. Clearly, the ISB was used for purposes beyond those originally envisioned.

During this period, the Taszar ISB mission was executed by an aggregate of officers, noncommissioned officers, soldiers, and civilians that comprised the U.S. Army Support Element Taszar (USASET), previously known as the National Support Element. The USASET consisted of a headquarters element (command group, headquarters and headquarters company, and S1 through

S6 coordinating staffs); a medical task force; a military police company; and a combined finance, personnel, and mail platoon.

The Defense Logistics Agency maintained a Defense Energy Support Center office and a Defense Reutilization and Marketing Office (DRMO) at Taszar as well. Individual replacements were on temporary change of station orders for 6- to 9-month rotations; otherwise, Task Force Eagle provided unit-sized replacements made up of both Active and Reserve component personnel.

At the onset of the Taszar ISB operation, the USASET Deputy Chief of Staff for Logistics (DCSLOG) was a lieutenant colonel, but by early 2000 the position had been downgraded to a major. The DCSLOG was responsible for ensuring support, which included ammunition, motor pool, food service, property book, parts requisition, and sub-area petroleum operations. The contract management officer consolidated contracting assets to achieve maximal operational efficiency and economy. He also coordinated the activities of the Joint Acquisitions Review Board, which validated requirements. The board consisted of operations, logistics, legal, resource management, and contracting personnel who reviewed requirements for contracting support against USAREUR's established contracting support plans and priorities.

For support operations, the DCSLOG tasked Brown & Root Services, Inc. (BRS), the Balkan theater support contractor. [BRS is known now as Halliburton KBR.] The support operations contract covered actual costs incurred plus a separate award fee. The award fee served as an incentive and as the profit margin for the contractor. BRS was graded on three criteria: funds management and cost control; performance; and coordination, flexibility, and responsiveness. A Defense Contract Management Agency (DCMA) representative, in coordination with his trained cadre of contracting officer representatives (usually DCSLOG personnel), provided quarterly assessments of BRS's performance to determine the amount of the award fee.

Because they were responsible for the entire Balkan sustainment contract, BRS located their headquarters in nearby Kaposvar. From there, they could coordinate with the DCSLOG on a daily basis while providing a host of basic combat service support functions—

Move. The primary means of conveyance for sections and units was nontactical vehicles. The fleet consisted of about 130 vehicles. BRS provided weekly dispatches, performed quarterly inspections, and recovered vehicles if necessary. BRS operated a 24-hour maintenance facility, which permitted them to inspect vehicles overnight without affecting mission accomplishment. BRS also managed a float pool of about 50 vehicles, in concert with the DCSLOG, that provided additional

vehicles when required for mission support. (For instance, travel to Bosnia required a minimum of two vehicles.)

The greatest challenge for BRS was providing daily mail delivery from the Frankfurt Regional Air Terminal in Germany to Taszar and points south, such as Eagle Base and Camp Able Sentry in Macedonia. Narrow mountain roads, horse cart traffic, and a lack of established customs procedures made the task difficult. BRS overcame these obstacles by staging driver teams throughout the Balkans, which permitted crews to rotate and check their vehicles after 500 kilometers of operation.

BRS also operated Falcon and Eagle Expresses to ship supplies through Taszar to SFOR and Kosovo Force (KFOR) elements. The route they used for these shipments was 3,836 kilometers long because they had to bypass Serbia and travel through Romania and Bulgaria. Fortunately, BRS had a state-of-the-art control system that enabled them to track their vehicles throughout the Balkans.

Fuel. The Sub-Area Petroleum Office (SAPO) for the Balkans Theater (Hungary, Bosnia, and Croatia) was part of the USASET DCSLOG. This was the only instance in which the Taszar ISB was directly responsible for providing support to Task Force Eagle. The office served as the liaison among the U.S. European Command's Joint Petroleum Office, subordinate units, and support agencies such as the Defense Contingency Support Team elements in Split, Croatia.

The SAPO ordered and managed over 2 million gallons of fuel per month. This included JP8, diesel, and mogas (used in unmanned aerial vehicles) purchased by vendors in the theater. Fuel was delivered to Task Force Eagle elements at Camps Coyote and McGovern in Bosnia by truck. Fuel for Taszar was delivered by railcars, which doubled as the fuel storage facilities. Although the railcars created a highly vulnerable target and therefore presented a force-protection issue, environmental and safety concerns and physical constraints prevented the construction of fuel berms on the airfield. BRS tested the fuel, maintained fuel consumption records, and operated the retail fuel distribution point.

Fix. The tactical fleet was limited to high-mobility, multipurpose, wheeled vehicles (HMMWVs) for the military police company, M915 trucks for the transportation squad, and ambulances for the medical task force.



□ Environmental and safety concerns and physical constraints prevented the construction of fuel berms on the airfield, so the railcars bringing fuel to Taszar doubled as storage facilities.

The military police company and the truck squad that transported hazardous cargo to and from Bosnia were the only units that had organizational-level mechanics. Military police HMMWVs were used constantly for convoy security and route reconnaissance and by the quick reaction force.

BRS performed direct support maintenance for the military police company's tactical vehicles and requisitioned parts from the 2000th Theater Army Materiel Management Center of the 21st Theater Support Command through the Standard Army Maintenance System. They inspected the rest of the seldom-used fleet quarterly.

Sustain. The size of the medical task force varied. By late 2000, the medical treatment facility consisted of three physicians, one dentist, one nurse, and eight medics. The task force was able to provide level II care to include dental, laboratory, x-ray, and patient holding services. There were no dedicated air-medical assets. As previously mentioned, a physician and a medic team deployed semiannually to support the Rijeka port mission.

The USASET contracted with a local Kaposvar hospital to provide level IV care. (The sophistication of medical services improves at each successive level of care; level IV medical resources include trauma, resuscitative, surgical, orthopedic, and radiological capabilities.) Every USASET vehicle had a list of nearby hospitals and clinics along the main supply routes in Croatia and Bosnia to consult in case of an emergency.

The Defense Supply Center Philadelphia-Europe, based in Bischofsheim, Germany, provided class I (sub-



□ Cargo is loaded into a C-130 Hercules at Taszar Airfield.

sistence) items. Theodor Wille Intertrade, the prime vendor for the Balkans, shipped the food to their Croatian subcontractor in Petrijna (about 50 miles southeast of Zagreb). From there, it was delivered to U.S. elements in Taszar, Tuzla, and, when necessary, in Rijeka. The food provided was specified on the standard Army 21-day menu. USASET personnel inspected subsistence for both accountability and safety reasons at the Croatian warehouse. Taszar did not maintain a class I distribution point except for meals, ready-to-eat, which were for emergency use only.

Personnel in Tuzla and Taszar consumed only bottled water because of health concerns. An Italian-based contractor delivered the water to U.S. facilities. BRS provided bulk water at the rate of 25 gallons per soldier per day for the dining facility and 10,000 gallons per day for the medical facility through commercial water mains and potable water tankers. They tested the water to ensure that chlorine levels were maintained at between .05 to 2.0 parts per million.

The main dining facility operated by BRS was open 24 hours a day, although there were only three serving times during the day. Operating all night long provided military police, medics, contractors, and other nighttime workers an opportunity to get a meal that otherwise might not have been available to them. In December 2000, a dining facility based at the Taszar airfield was dismantled. However, if necessary, it could quickly be rebuilt to accommodate an increased headcount.

Arm. U.S. Forces stored ammunition in a holding area located near the airfield. The facility had approximately 15 storage pads that could accommodate 584 short tons of ammunition. The facility primarily held the USASET's basic load of ammunition and served as a temporary storage facility for ammunition rotating in or out of the area of operations. Ammunition was delivered from Germany by rail and transloaded to the truck squad for delivery. The procedure was reversed when ammunition was returned to Germany. A motion-detection alarm system, coupled with random, roving military police patrols, provided security. Explosive ordnance support was provided on an on-call basis from Task Force Eagle.

Taszar Today

The current stage in the history of the Taszar ISB is characterized by cutting costs and reducing the size of the combat service support footprint in Hungary. By August 2001, after 5½ years of operation, the Taszar ISB included only the Taszar Airfield and a nearby base with a soldier population of about 200. USAREUR planners concluded that the mission could be prosecuted just as effectively by collocating the ISB with Task Force Eagle in Tuzla, Bosnia. A provisional area support group (ASG) now performs the Taszar ISB mission. This ASG, located in Tuzla, has a subordinate area support team of about 100 soldiers and civilians in Taszar. Ultimately, U.S. forces will pull out of Bosnia and redeploy with their equipment. When that happens, Taszar will be the focal point for a reverse RSO operation.

Although the uniformed staff there is minimal, Taszar still serves as an ISB for U.S. forces and provides a number of important services—

- The Fighter Management Pass Program offers Tuzla-based soldiers the opportunity to stay in either Taszar or Budapest, Hungary. This gives soldiers a 4-day weekend as part of a rest and recreation break during their 6-month tours in Bosnia.
- Taszar serves as the maintenance and storage facility for M2/3 Bradley fighting vehicles for Task Force Eagle units that rotate to the Taborfalva Training Area in central Hungary for gunnery exercises.
- The secure airfield is available in the event that an aircraft cannot complete its mission to either Tuzla or Ramstein Air Base, Germany. In such an event, housing

and subsistence would be available for waylaid passengers.

- The ISB serves as a rest stop for ground convoys between Germany and Bosnia.
- The Navy and Air Force and their Hungarian counterparts can use the airfield and other facilities in Taszar for NATO training.
- In the unlikely event that additional U.S. elements have to deploy to support operations in Bosnia, the Taszar ISB can serve its original purpose.
- The Taszar ISB can be used as a reverse RSO site for equipment to be shipped back to Germany.

Lessons Learned for the Road Ahead

Importance of teamwork. The USASET mission would not have been possible without teamwork among the Active and Reserve components, Department of the Army (DA) civilians, and BRS contractors. Each element had a particular skill that was essential to mission accomplishment. Civilians performed critical missions such as contracting, flight control, finance, intelligence analysis, and engineering. By employing expatriate and host nationals, BRS reduced the demand for uniformed personnel, who then could be employed elsewhere in the theater for military operations. No one element was more important than another.

Rotation of personnel. In accordance with DOD policy, military personnel were usually on station for only 6 months. In some cases, the tenures of some of the commanders were even shorter. This created the problem of short-term institutional memories. Although there was a standard “right-seat-driver” program to acquaint replacement soldiers with their new tasks, there was no means to prevent the recurrence of mistakes. (For instance, DCMA had to train contract representatives constantly on inspecting their portion of the BRS contract.) Also, it was difficult to recruit DA civilians for yearlong assignments because of the remoteness of Taszar and the lack of financial incentives. This problem was never resolved satisfactorily.

Establishing host nation support. Support from the Hungarian Government and local residents was critical to mission success. The local population provided cooks, cleaners, and interpreters who were responsible for important day-to-day missions. The Hungarian Army element garrisoned at Taszar also provided force-protection support. In short, host nation support is a force multiplier.

Exploiting a mature ISB. An ISB can be used in a number of ways after its original purpose has been realized. Although soldiers and their equipment were no longer processed through Taszar for deployment to Bosnia, the base and the adjacent airfield offered joint training opportunities for the Navy and Air Force. The contractor base also was available to support Marine

Corps exercises in nearby Croatia. Future ISBs need not be confined to their original purpose if mission, enemy, terrain, troops, time available, and civilian concerns permit additional training events.

Force protection. The facilities in Taszar were constructed during the Communist era, when the concept of force protection was not a consideration because a totalitarian regime was in power and Soviet troops were present. Although prudent force protection measures were in effect at the Taszar ISB, they took on an added urgency after the attack on the *USS Cole* in October 2000. Shortly thereafter, a comprehensive review of the facility demonstrated a number of vulnerabilities that required significant and costly changes. Simply put, a base built in an earlier era may not be practical for today’s U.S. forces without critical upgrades.

Wear and tear. Despite the best maintenance efforts, the military police HMMWVs sustained considerable wear and tear from 5 years of daily use. Although this did not affect mission accomplishment, it created a strain on the limited number of organizational mechanics the military police company brought into theater. Other HMMWVs on the ISB were driven infrequently. In the future, a policy of rotating vehicles during long-term deployments may have to be included in ISB operating procedures.

U.S. forces will require access to intermediate staging bases in their sustained war against terrorism. This critical capability will mitigate the otherwise deleterious effects of staging combat operations from the continental United States. Although the circumstances of the Taszar ISB operation may not be replicated at future ISBs, lessons learned in Hungary can be useful in the war on terrorism.

ALOG

Major James J. McDonnell is a combat developments officer in the Directorate for Combat Developments at the Army Combined Arms Support Command at Fort Lee, Virginia. He was the Deputy Chief of Staff for Logistics Plans and Operations Officer for the U.S. Army Support Element Taszar, Hungary, from August 2000 to May 2001.

Out of the Ordinary Supply in Korea

by Major Thomas M. Magee, USAR

The more things change, the more they stay the same. That axiom applies to the field of military science as much today as in the past. In spite of the Revolution in Military Affairs, we face many of the same issues today that commanders faced long ago; only the package is different.

Today's Army encounters the same types of problems General John J. Pershing faced when the United States entered World War I in 1917. Then, General Pershing had to decide whether to send U.S. troops to fill in the existing Allied forces or to send them to fight as a distinct unit. Now, U.S. military leaders must determine how to structure the time-phased force development list for early combat in various theaters. The Army must get the largest possible combat force deployed as quickly as possible. The Chief of Staff of the Army has launched a wide array of programs to reach that goal.

As time goes on, modern warfare is getting faster, heavier, and more lethal, and the volume of supplies needed by armies in the field grows. This trend shows no evidence of declining. Armies need thousands of tons of fuel, ammunition, parts, supplies, and equipment to stay abreast of trends. Transportation assets are required to move them all. At the same time, the Army must be ready to transport reinforcement units flowing into the country.

Now more than ever, unit commanders must have incredible foresight to deploy into a combat theater. Military units are complex collections of equipment and personnel. Over time, units have grown bigger, and equipment has gotten heavier. Compare the size of the M48 tank to the current M1 tank. The M1 tank is at least 30 tons heavier than the M48, and that comparison covers only one inventory item for a combat unit.

It takes detailed planning for a combat unit to move across the street or across the world. The first place planners look to trim things to make deployment quicker is the tail. However, that is not always easy because the logistics demands of war have grown with the size of the equipment. At the same time, the speed of operations has increased to the point that entire wars now can be concluded within days as opposed to the months that campaigns lasted during World War II. Current plans call for the Army to be able to deploy a corps to a future

war zone within 30 days. That sort of timeline is unheard of in military history. The challenge facing the Army is immense. How do we move quickly to win the war while the war is underway?

The need to deploy forces quickly in a contingency is apparent in South Korea. Eighth U.S. Army (EUSA) has only 37,000 soldiers stationed in South Korea. To move units from the continental United States to Korea requires a sea voyage of 2 to 3 weeks or an airplane ride of more than 20 hours. The entire southern half of the peninsula, which comprises South Korea, is about a 6- to 7-hour car ride from north to south. Fifty years ago, it took the North Koreans a "wink of an eye" to get half way down the peninsula. Consider how much more quickly North Koreans could make the trip today.

The disparity between the time it takes U.S. forces to get to the theater and the time it would take enemy forces to overtake a country is not unique to South Korea. The Army faces this problem all over the world in all theaters. It is one of the major forces behind the Revolution in Military Affairs and the Army's redesign of combat units with new equipment, tactics, and doctrine.

Along with the Revolution in Military Affairs, the Army is experiencing a Revolution in Military Logistics. EUSA has several programs—many of them unique to South Korea—to improve combat support and combat service support in the theater.

Wartime Host Nation Support

The first of these programs is wartime host nation support (WHNS). WHNS assets first became a critical force multiplier during Operation Desert Storm, when the Government of Saudi Arabia provided a wide range of assets to accommodate the needs of U.S. forces. Those assets included everything from tents and buildings to cars and trucks—whatever was needed to help win the war. U.S. military planners in South Korea saw how well WHNS worked during Desert Storm and decided to develop a similar program for use in the Korean theater.

In 1991, Secretary of Defense Richard B. Cheney signed the WHNS umbrella agreement with South Korea. The agreement established a formal procedure for acquiring assets within the WHNS program. The program calls for South Korea to provide U.S. forces with

This article expresses views of the author, not the Department of Defense or any of its agencies.

Type of division	Class III petroleum, oil, and lubricants (gallons per day)	Class V ammunition (short tons per day)	Class VII major end items (short tons per day)	Class IX repair parts (short tons per day)
Armored	606,940	1,452	575	43
Infantry	580,067	1,442	538	40
Light	69,488	651	78	4
Airborne	102,783	677	119	4
Air assault	270,196	847	198	6

□ Demands for support generated by different types of divisions.

various assets from the local economy during a war. It also outlines a joint payment plan for the assets between the United States and South Korea.

The definition of WHNS in the accord is “military and civilian resources and assistance provided by the government of the Republic of Korea for the reception, onward movement and sustainment of U.S. forces in times of crisis, hostilities, or war.” The WHNS program’s list of what the host nation will provide is extensive. It includes ammunition; petroleum movement; communications; security services; engineering; field services; facilities; field supplies; construction services and equipment; transportation vehicles; maintenance services; nuclear, biological, and chemical materiel; personnel services; a Korean Service Corps (KSC) battalion; Korean Augmentation to the U.S. Army; and direct-hire civilians.

The table above indicates the size of the supply demands a division generates. As the table shows, war-time demands on the Department of Defense transportation system are immense for sustainment tasks alone. Without WHNS, all of the materiel needed to sustain the Army in a theater will have to be shipped from the United States. Therefore, anything that will reduce the strains on the transportation system caused by that demand will help greatly.

The present WHNS plan calls for providing U.S. forces with 5,105 vehicles, of which 1,443 are M915 tractor-trailer-like rigs. The M915 is almost a carbon copy of the commercial tractor-trailer truck and weighs 14 tons. If we had to ship those trucks to South Korea from the United States, we would need enough U.S. transportation assets to ship an additional 20,202 tons. WHNS allows U.S. forces to ship 20,202 tons of other

essential war supplies or personnel to Korea in the critical first 30 days.

WHNS makes reception, staging, onward movement, and integration (RSO&I) possible. The RSO&I process must work for the United States to get its power from the continental United States into play in a theater. WHNS provides a critical boost to the process by allowing the United States to put more combat troops into the flow earlier.

The WHNS program is up and running. Information on the plan released in 1999 shows that the program will provide a large amount of assets for U.S. forces. The quantities of assets planned to be provided to U.S. forces from the Korean economy are shown in the table on page 29.

Whether or not these quantities are enough to support U.S. forces in time of war is questionable. The Republic of Korea (ROK) Government only approves approximately 35 percent of U.S. needs. This is because they must balance our demands against the output of their economy, the needs of their civilian populace, and the needs of their armed forces. They also have to factor the political environment into their planning. While what they are providing may not be enough to meet all U.S. military needs, it will help greatly. In addition, it is commonly believed that once a conflict starts, the ROK Government will be more generous with what they approve.

WHNS items are critical to mission accomplishment. For example, everything in a war zone must occupy a plot of land. The terrain of South Korea makes this significant because every piece of land seems to be claimed for some purpose. All use of terrain must be planned. All requests for land and buildings must go through G3

Vehicles	5,105
Personnel	23,733
Maintenance options	31
Facilities and land (square meters)	23,729,624
Construction companies	18
Pieces of construction equipment	1,296
Materials-handling equipment	124
Water (liters per day)	195,437
Ships	59
Airplanes	10

□ Assets that will be provided through the WHNS program.

and WHNS channels.

Determining what and how much will be provided by WHNS is a 2-year process. It is critical that U.S. units be proactive in this process. They must submit their needs through U. S. Forces Korea, which then sends them to the ROK Government for resolution. It takes about 6 months to run through U.S. channels and about 18 months to clear South Korean channels. If units miss the submission deadline, they cannot easily submit later. While there is a route for noncycle submissions, it is not as user friendly as the method described above.

KSC

Another critical program, similar to WHNS, is the KSC. The KSC program uses Korean nationals to perform various combat support and combat service support functions for U.S. forces. These citizen soldiers have no affiliation with the ROK Army. However, ROK Army officers and noncommissioned officers lead the units. The battalion core consists of U.S. military personnel.

The KSC traces its history back to the Korean War,

when, during the Pusan Perimeter days, Korean civilians carried ammunition from the ships to the front lines. This service proved to be priceless to the defending U.S. Army.

In peacetime, KSC personnel number around 2,000. They perform a multitude of tasks from driving buses to building shelters. The battledress uniform is their duty uniform. KSC soldiers receive paychecks from the U.S. Treasury for services rendered, and they regularly receive common task training.

KSC forces will grow to more than 20,000 in time of conflict. They are grouped in specialty platoons that perform tasks such as driving ambulances and buses, constructing bridges, and maintaining equipment. During the first part of a conflict, KSCs will be the only service assets available. KSCs can be thought of as the “muscle” of the WHNS program. Requests for these units must be submitted through the chain of command to the KSC battalion commander. He then decides whether the request should be met and if he can staff it or if he should request permission from the ROK Government to expand the program.

LOGCAP

Another program in Korea that could help meet a logistics shortfall is the Logistics Civil Augmentation Program (LOGCAP), which is administered by the Army Materiel Command. Under LOGCAP, the Army contracts with a vendor to provide a variety of services. The contractor in turn hires either sub-contractors or local nationals to do the labor. EUSA is in the process of developing its LOGCAP program.

These are just three programs that have evolved as a result of overwhelming need. All three programs will be critical to survival in a Korean conflict. All three programs depend on individuals with foresight as planners. In logistics, as in combat, the individual soldier makes all the difference.

ALOG

Major Thomas M. Magee, USAR, is the Wartime Host Nation Support Transportation Officer for the Des Moines, Iowa, Army Reserve element of the 19th Theater Support Command. He is a physical security specialist for the Federal Protective Service of the General Services Administration in Kansas City, Missouri. He has a B.S. degree in business administration from the University of Kansas and an M.P.A. degree in public administration from the University of Missouri. He is a graduate of the Military Police Officer Basic Course, the Military Police Reserve Officer Advanced Course, and the Combined Arms and Services Staff School.

Everyone Must Be Able to Move!

by Major James R. Lackey, USAFR

Years after the Gulf War, Saddam Hussein began moving Republican Guard units to the Kuwait border, threatening Iraq's southern neighbor again. The United States needed a strong military response—in the form of increased deployed firepower—to show that another Kuwaiti invasion would not be tolerated. The mission was dubbed Operation Deny Christmas II by the aircrews involved and assigned to the strategic airlift elements of the Air Mobility Command. (That name was chosen for the mission because it was the second year in a row that a deployment of this type came along in time to spoil the holidays.)

The operation's concept was simple enough—move elements of the Army's 24th Infantry Division (Mechanized) from its home base at Fort Stewart, Georgia, to an air base in Kuwait. Air Force C-5 and C-141 cargo transporters filled the huge ramp at Hunter Army Airfield, in Savannah, Georgia, which is the airhead for the 24th Infantry Division. Two days after the deployment order was given, cargo still was not flowing.

Because of numerous operational failures, there was, on average, a 3-day lag between the time an airplane arrived in Savannah and when it departed to the theater of operations. At the height of the deployment, when aircraft should have been departing every hour with a full load of combat power for the 10,000-mile trip to the Persian Gulf, it was taking more than 5 days for the 24th's load teams to organize units at Fort Stewart, transport them to Hunter Army Airfield, prepare the equipment for transport to the theater, and load it on aircraft. Scarce strategic airlift assets sat on the ground for days while undertrained and overworked load teams prepared equipment such as trucks; high-mobility, multipurpose, wheeled vehicles; AH-64 Apache helicopters; and pallets of cargo for shipment. Wasted capability, wasted time, and delayed arrival of forces on the scene all conspired to weaken a critical show of force by the United States. Fortunately, the Iraqis did not invade, or the on-scene commander would have found himself fighting with one hand tied behind his back.

It is unlikely that the United States will ever enjoy another unmolested 6-month period to build up its forces for a conflict as we had with Operations Desert Shield and Desert Storm. We can be sure that the first lesson potential adversaries learned from the Gulf War is this: Strike quickly, make gains before the United States has a chance to deploy, and bargain from a position of strength.

To prepare for a contingency, all elements of the U.S.

military must plan, practice, and be ready to deploy in the shortest time possible. The kind of failure demonstrated during Operation Deny Christmas II must never be repeated. With a critical shortage of strategic airlift and increased operational demand, airlift assets are stretched thin, and the situation will not improve in the foreseeable future.

The Problem

U.S. military units are not prepared to deploy their forces quickly in a crisis because they do not practice moving often enough. In each real crisis, "the wheel" of packing up and moving has to be reinvented.

Only a small number of troops are trained fully in the science of preparing cargo for air shipment. These troops are expected to cover too large an area during a unit deployment. This results in—

- Limited contingency planning. A unit must know what to do if 50 percent of its equipment does not arrive when it does.
- Wasted space. Nothing is more crippling to the airlift system than a capability not fully utilized. Every year, the Air Mobility Command moves millions of cubic feet of air because units do not ensure that every square inch is used.

In a real crisis, units want to carry everything they own and then some; therefore, planners have no true idea of how many aircraft it will take to move a force.

The Solution

Every unit, from the highest headquarters to the lowest operational level, must plan and practice for air movement to a crisis spot. This includes loading required equipment at the home base, moving it to the airhead, and preparing it for air shipment. A unit's capability to move quickly must be a part of every operational evaluation. Troops in the field care about what the commander values, so leaders at all levels have to buy off on this idea first. Commanders must open every container, have every item removed, and ask why it is needed. They must guarantee that every inch of space is used.

To calculate the number of aircraft needed and the time required to deliver a particular unit during a deployment, planners use the time-phased force deployment list (TPFDL). Units throughout the military constantly tinker with the TPFDL planning models and try to balance the airlift they need to move a unit against hogging too much airlift during a crisis. Even with extensive planning, the

TPFDL plan often is tossed out and general officers scream for more airlift. It is not uncommon, for example, for a deploying commander to ask for seven C-5s when the TPFDL plan calls for five.

Good commanders have to be realistic about the variables of airlift and plan for system failures and aircraft breakdowns. Then, when aircraft three and five out of an eight-ship stream do not arrive on location when expected, their absence does not paralyze the mission. The concept sounds simple enough, but such problems happen every day.

On one deployment to Saudi Arabia, the Air Force became a pawn in Saudi royal family politics. The effect was a cancellation of over-fly rights for Air Mobility Command aircraft at the height of Operation Southern Watch. (To protect native opposition forces, United Nations coalition forces barred all Iraqi fixed- and rotary-wing aircraft from flying over the surveillance area. That mission was dubbed "Operation Southern Watch.") The airspace bottleneck between Saudi Arabia and Egypt was closed, causing a massive logjam. Aircraft en route to Saudi Arabia had to be diverted to available airfields. Planes getting ready for departure from the United States were halted because European "jumping off" bases suddenly were overrun with backlogged aircraft. The Secretary of Defense personally intervened and corrected the situation, but not before a clear object lesson was presented to potential adversaries. Disjointed and mixed deliveries are a fact of life, and similar situations happen in nearly every deployment.

Commanders have to be proactive to ensure that every inch of their airlift allotment is used. Every single container must be opened and tough questions have to be asked—

- Is all available space used effectively?
- Is anything being transported that can be acquired in a deployed location?
- What really must go?
- If a war started tomorrow, what things will be needed but for which planners typically do not plan?
- Have wartime operations been practiced using only the equipment scheduled for transport?

Practice often reveals problems not anticipated during planning. An excellent example of this occurred during the Gulf War. Some Army units were shipping M2/3 Bradley fighting vehicles to the Persian Gulf region by air transport. The load planners consulted the "book" and noted the standard weight for the Bradley with a combat load. However, when the deploying troops noticed the empty troop compartments in the vehicles, they filled up the space with extra water, equipment, and personal gear. Tons of unweighed, unprepared cargo rode to the Gulf in the bellies of airlifted Bradleys. Because they had incorrect weight information, load planners were not able to calculate weight accurately and balance aircraft loads. In the short term,

this created an extremely hazardous situation of overweight aircraft. The out-of-balance loads cut the service life of the aircraft significantly because they over-stress the aircraft's wings. A result of this is the fact that, despite a shortage of airlift, some C-141s are being retired because airframe cracks and increased maintenance costs have caused their continued repair to be uneconomical.

Airlift Rules of Thumb

Here are some basic, commonsense ways to attack airlift problems—

- Commanders must verify and justify every bit of airlift capability allocated to them. They must check containers, open boxes, and look inside vehicles. Airlift not fully used is a waste of a critical capability.
- More soldiers must be trained to prepare equipment for air shipment. Primary troops allocated to this task must be augmented in a crisis to get equipment ready for shipment.
- During a crisis, senior commanders must adhere to the TPFDL. If the plan calls for five C-17s, they should not ask for eight. They may get the extra airplanes if they have the muscle, but the entire system will suffer as a result.
- Commanders also must ensure that exercises address the problems of modern airlift. In an exercise, forces should fight with only the equipment they plan to deploy. Then those equipment allocations should be reduced randomly to simulate aircraft mechanical failures so troops can learn to fight a war with varying amounts of their gear.

The question we now face is not "if" the U.S. military will need to deploy, but "when." Fighting our next war likely will involve deployment on a scale and timetable never before seen in history. Our enemies have learned the lessons of the Gulf War and will not concede an unchallenged logistics tail like the one we enjoyed during that conflict.

Every unit must plan, practice, and war-game the difficult task of packing up the necessary warfighting gear and getting it ready for air shipment. With the critical shortage of airlift, commanders have the dual responsibility of ensuring realistic planning and fully utilizing the capabilities assigned to them. Then strategic airlift can deliver America's combat power to the tip of the spear and halt aggression before it starts.

ALOG

Major James R. Lackey, USAFT, is a C-5 evaluator pilot in the 709th Airlift Squadron, 512th Air Wing, at Dover Air Force Base, Delaware. He is a graduate of the Squadron Officers School, Air Command and Staff College, and Air War College. In civilian life, he is an Airbus 320 captain with JetBlue Airways.

A Japanese Guadalcanal Diary

by Master Sergeant John Blair, USAR

The Guadalcanal campaign was a turning point of World War II in the Pacific. A vital factor in determining the outcome was U.S. logistics superiority. The diaries of Japanese soldiers at Guadalcanal offer sobering testimony to the privations caused by logistics shortcomings.

After their attack on Pearl Harbor on 7 December 1941, the Japanese were masters of much of Asia and the Pacific. But within the next year, in the Solomon Islands in the southwest Pacific, on an obscure piece of real estate called Guadalcanal, Japan would lose a campaign that lasted 6 months, involved almost a million men on both sides, and was fought on land, in the air, and at sea. The battles for the island stopped Japanese expansion in the Pacific and, along with the Japanese defeat at Midway in June 1942, turned the tide of the war in favor of the United States.

Logistics for both the Japanese and the United States were stretched to the breaking point as the Guadalcanal campaign began. On 7 August 1942, U.S. Marines landed on Guadalcanal in the first amphibious assault against Japanese-occupied territory in the Pacific. Even with support from the Air Force and Navy, the Marines' initial logistics support was tenuous. The bottlenecks encountered in getting food and equipment ashore had cut the limited supply rations to the bone. At one point early in the campaign, 6,000 marines were fed rice for breakfast and rice with raisins for lunch and supper. One Marine company captured some Japanese supplies, so they had oatmeal for breakfast, lunch, and dinner. The Marines captured the unfinished Japanese airfield, and on 9 August the engineers and assorted helpers began to complete it. Although logistics problems would continue to plague the U.S. forces, they were not on a par with the critical shortages faced by the Japanese.

The following excerpts from captured Japanese diaries are a poignant record of the privations and suffering experienced by the Japanese infantrymen on Guadalcanal. The journals were translated by the G2 Section of XIV Corps. One was a young officer's diary, the second belonged to a noncommissioned officer

(NCO), and the third was written by a soldier of unknown rank. The first journal entry of these writers strongly suggests that they were with the Nagoya Division, the last Japanese force to be committed to Guadalcanal.

24 December 1942

First Lieutenant Okajima: *Wakuda Noboru died of illness. In the end, those [who are] of weak will [will] die. He was always most eager to drink water.*

Unknown soldier: *Since the 14th, two officers of the 2d Company have been going insane. They probably have become pessimistic about the war situation. There is no other change in condition. We passed the day as usual.*

Japanese soldiers had taken to calling Guadalcanal "Starvation Island," a pun derived from the first phoneme in the Japanese name for the island. "Ga" means "hunger" in one Japanese inflection.

25 December 1942

Okajima: *Sawada and Uchida died of illness. That may be because they were unreasonably overworked.*

Transport of supplies and equipment was left entirely to the bent backs of soldiers trudging single file for up to 16 hours a day along the narrow jungle paths. No cooking fires were permitted, so the soldiers subsisted on a half ration of cold rice.

Unknown soldier: *Today is Christmas Day. Therefore we had many presents from the enemy such as intense bombardment by artillery and naval guns. On the other hand, not one of our planes came from new airfield which was completed on the 15th. Even the soldiers in the front lines have become very disgusted, and do not even talk about our planes anymore. The 1st and*

3d Battalions (strength of 90 men) . . . are looking forward to New Year's Day in hope of getting supplies.

NCO: Today is Christmas, a very important day for the enemy. Artillery bombardment is a terrible thing. Again I became sick with malaria and my temperature began to rise, so I fell asleep in the trench. I prayed for a complete recovery, because this is the third time that I had this fever.

26 December 1942

Okajima: Asaba Kazuo also died of illness. Malaria fever affected his mind and he acted peculiarly. After eating his meal, he died suddenly. This death increased the large total of those killed in action and from the disease to 13 men. This makes approximately the total losses we received in the occupation of Hong Kong and Java. Even in the face of the enemy, the men's minds were entirely occupied with thoughts of eating. We are waiting for the spring sprouts to come out, and we dream of the joy of reducing Guadalcanal. Moreover the airfield is finished, and friendly planes will come in large numbers.

Okajima's unit must have been involved in the fall of Hong Kong, which was attacked on 7 December 1941, and Java, which was conquered on 9 March 1942.

NCO: Corporal Abe found some sweets on a dead enemy and divided them among them this evening.

Unknown soldier: There are lice here, and whenever we have time these days we hunt for them. My strength is exhausted, and my ordinary pulse is around 95, which surprises me very much.

27 December 1942

Okajima: Oba Fumio died from illness. It was not that he lacked energy, but he was drenched by the rains which come regularly every afternoon in this life in the jungle.

The 2,500 square miles of Guadalcanal are dominated by the Kavo Mountains, which reach a maximum height of 8,000 feet. The island is heavily forested. Rains came often, and the nights were chilly, forcing men in rotting clothing to huddle together for warmth.

NCO: I went with Corporal Abe to get some more meat, because it was so good yesterday. It was to be eaten by the company. It was buried in the company

cemetery to keep it secret. However, maggots had started to develop in it.

28 December 1942

Okajima: First Lieutenant Amai died [of a wound suffered the day before]. Now, without seeing the fall of Guadalcanal, his spirit sleeps eternally in the jungle. My tears overflow.

NCO: First Lieutenant Miyoshi returned with captured enemy rifles and ammunition. The enemy has plenty of these, so they can afford to leave them behind. Because of my dysentery, I stopped eating meat. Health comes first.

Unknown soldier: My body is so extremely exhausted, that one "GO" of rice is all that I can eat, and walking is very difficult. No relief comes for this unit. The army doctor will not even send us to the rear. At present, we are all very sick men. Even if we were relieved, not even one of us may recover. In fact, we are left to die from total exhaustion and malnutrition rather than from bullets.



□ Japanese prisoners on Guadalcanal.

The Japanese 17th Army took the view that, as long as it had access to seemingly unlimited human resources, no effort would be made to rehabilitate units that were shattered in combat or through the privations brought about by inadequate logistics administration.

29 December 1942

Okajima: Yamamoto Kyoichi died from a wound. Such young soldiers with weak wills are no good, for they die from slight wounds. His wound was trifling with hardly any bleeding. Now the casualties are 25 men.

NCO: Bandages, rifle ammunition, and lots of canned goods of the enemy were found. We are having difficulty in selecting men to go out on patrol on account of our rundown condition.

30 December 1942

Okajima: By the 15th of next month, transportation of supplies and troops will be carried out, and we shall gain air superiority. After the 16th, units from the rear will pass us and, after preparatory bombardment by planes and artillery, will carry out a general attack. In 2 months, all of Guadalcanal will return to our hands. Then the enemy will not be able to hold Tulagi area.



□ U.S. marines bring supplies ashore in the first days of the Guadalcanal campaign in August 1942.

Then our combined fleet will concentrate in the Tulagi area. I believe that the decisive battle between U.S. and Japan will end in a complete victory for the Japanese forces in the bright spring of 1943, and will be an everlasting light in military history.

31 December 1942

NCO: Whiskey was brought up by Sergeant Major Mori, to be drunk by everyone as directed by First Lieutenant Miyoshi. According to word from the Regiment, New Year's will be celebrated after the fall of Guadalcanal.

Unknown soldier: Since the 28th, not a single grain of rice has been distributed, and during this time, 3 pieces of hardtack were issued. Today there were 3 cigarettes and only a bit of the nutrition ration. For this New Year's Day in the battlefield, this advance [will be] enough.

1 January 1943

Okajima: Two officers of the company have died, one is ill, and the other is at the front. There is no one to be my rival as company commander. I went to see the company's sergeant major and senior sergeant and had a long talk. I learned many things which I would not ordinarily have learned, such as the deficiency of ordinary training in recruits, deficiency of training in interior guard duties, and lack of education. As company commander, there is much of this that I can put to use.

NCO: Gave 3 *banzai* [cheers] for the Emperor and sang the national anthem. We toasted with whiskey. We are fortunate to drink whiskey on this island. A number of shells burst around the position at about 1400. It is surprising how many shells the enemy has.

Dismantled field guns and other heavy equipment had to be hauled up the hills. Each downpour left a gooey muck that pulled shoes from the infantry soldiers' feet

and left them exhausted and needing rest every few hundred yards. Gun after gun had to be abandoned, as well as many of the sick. The infantry were hungry, tired, and dispirited. Most of the light artillery and mortars littered the trail to the rear.

Unknown soldier: During the 3 days as New Year's [approached] on Guadalcanal Island, we have lived on one piece of hardtack, and this morning finally got one "GO" of rice. In the evening, one compressed ration was divided between two [soldiers]. Now we are eating rice gruel twice a day, and sleeping in the trenches as we are unable to walk. New Year's to us was just in name, for the day was spent suffering from bombardment and hunger.

2 January 1943

Okajima: I am waiting for the battalion commander, Major Nojiri, and I am anxious to see what kind of person he is.

NCO: I was reprimanded by the company commander for wandering along the coast. I'll have to be more careful from now on. I was only doing it for the sake of the company.

Unknown soldier: The enemy has finally become very active, and the front lines are dangerous. I wonder if that relief will come about the middle of the month. It seems that friendly planes will be coming over after the 15th. Sergeant Sato, Kame, died of illness.

3 January 1943

Okajima: As I was ill, I stayed at battalion headquarters . . . The total of those who have died is now 31.

NCO: I went to the battalion headquarters at 7 o'clock, but the company commander was not there as he was looking for a new company position. I apologized about yesterday's misconduct to his messenger. I am waiting every day for our planes to fly over, but I have not seen one yet.

Unknown soldier: The enemy is getting extremely active.

4 January 1943

Okajima: Supplies are gradually improving, and we only have to endure this for 10 days more.

NCO: Various rumors are heard, but their truth cannot be determined. Those are given to us only to revive our spirits. Two rations were given to every three men tonight. Many had the covers torn off because they were transported by air.

Unknown soldier: *The enemy is getting extremely active, and I wonder whether it will be today or tomorrow.*

5 January 1943

Okajima: *In the evening, the main force of the battalion arrived. Although it is called the main force, it consists of only 59 men. The battalion must have taken a serious beating.*

NCO: *Sergeant Takeya is missing. It is not possible for an active NCO to desert.*

6 January 1943

NCO: *A report came that rations for 10 days were landed and that 25 enemy planes were shot down.*

Unknown soldier: *Takayoshi, Jinya, died. He is a friend who has been with me every day in this platoon since we were called to the colors. He worked hard until he died of the usual sickness. Five men were killed in one squad.*

7 January 1943

Okajima: *36 more men departed for a battalion of the OKA unit.*

NCO: *This was the day for an enemy attack, but all is quiet. I drank some whiskey which First Lieutenant Miyoshi had. It was really good. This company is probably the only one that had whiskey at New Year's. New Year's without alcohol would be empty, but because of First Lieutenant Miyoshi's efforts, we were able to get some.*

9 January 1943

Okajima: *Hearing of conditions in each company from the NCOs, it seems that supplies are not coming, [and] characteristics are revealed which are not known under ordinary circumstances, such as the true nature of human beings. In a certain company, it is said that the NCOs ate twice as much and the officers three times as much as the men. A certain battalion commander received 100 cigarettes to divide among his subordinates, but he only gave 1 or 2 to his company commanders, and he lost all his usual prestige.*

Japanese soldiers landing on 9 October reported that many of the men who unloaded the large store of rice made off with the food in as complete a breakdown of discipline as Japanese soldiers could exhibit.

Okajima: *Thanks to the actions of equality like an ordinary soldier, the NCOs of the company thanked me, and as supplies started to come in smoothly, they brought me various extra things. There was good feeling all around. From this morning, there was a concentration of artillery fire at the depression near our company. It was most disagreeable to have the shrapnel flying*

around. We certainly would have been in bad shape if we had been hit by this shrapnel. Fukazawa Noboru died of illness. Because he usually does office work, he was not physically strong. This makes 39, and as a company commander I am deeply struck.

10 January 1943

Okajima: *Major Nishimura again drew men from the reserve unit. This afternoon, although I am commander of the main force of the company, there are only 19 men in all. It is really terrible to see electric lights go on at an enemy airfield.*

The Japanese had begun constructing the airfield at its two ends. After capturing it, the U.S. engineers at the airfield had to move 100,000 cubic feet of earth by hand to cover the depression in the middle of the airfield. Captured Japanese equipment was kept working and repaired by the ingenious mechanics. Fill dirt in already-measured quantities was kept on the edges of the airfield to be dumped and packed in craters caused by Japanese bombing. Night landings were done by flashlight at first, until a jury-rigged system of captured lamps was put together. The engineers used incredible improvisation to overcome monumental difficulties.

Unknown soldier: *Enemy bombardment becomes increasingly intense. We can hold out for one more week. My body is in such condition that I can barely walk. Food is 5 shaku [one-half go] of rice and some compressed rations. This makes 1 month that we have been eating just rice gruel.*

11 January 1943

Okajima: *By artillery fire, 3 more were killed and four wounded. It is too much to receive naval bombardment also.*

This was the last diary entry for Okajima.

12 January 1943

NCO: *I ran out of ink, so I shall have to write in pencil from now on. I reconnoitered the enemy situation in front of the 3d Battalion.*

13 January 1943

NCO: *Enemy artillery is shelling as usual. I went out of the fox hole for some fresh air and heard an argument about food going on in the leading squad—principally between Sergeant Inoue and Sergeant Major Mori. I was surprised to find out they were such NCOs. Morale among NCOs should be better. At 10 o'clock, Sergeant Inoue came to apologize.*

Unknown soldier: *About 5:30 this morning, we received artillery fire. First Lieutenant Oyama, Superior Private Abe, and Lance Corporal Senobi were killed. Lance Corporal Watsbe was wounded. Kato and I were*



□ Five destroyed Japanese tanks on the beach at Guadalcanal.

the only ones left Won't relief for this unit come quickly?

This was the last entry for the unknown Japanese soldier. The remainder of the entries are those of the NCO.

14 January 1943

Men are dying one after another, and now the company roster has 20 men, besides the company commander. The enemy keeps firing from distance, so we shall have to be careful of stray bullets. The enemy does not come close enough that we can kill them and get their rations. I am very hungry. I wonder if this is how it is when a man is starving. Rice cakes and candies appear in my dreams. I must train myself to suppress these desires.

Another Japanese recorded a typical advance: *The march was too much for many of the injured; scores of wounded Japanese were left by the wayside with scores of dead. They had neither food nor medical supplies. By the fifth day, NCOs were beating their flagging charges with switches, cursing them onward.*

16 January 1943

I heard one of the enemy talking busily in Japanese over a loud speaker. He was probably telling us to come out. What fools the enemy are! The Japanese Army will stick it out to the end. This position must be defended with our lives. There was no artillery shelling because of the broadcast. The enemy is broadcasting something vigorously at a distance. It will probably have no effect at all.

17 January 1943

According to the enemy broadcast, today they are going to attack our position. However, we have no fear. I went to the battalion headquarters in the morning and saw enemy propaganda sheets which were found in First Lieutenant Kasahara's area. The writing was very poor. The enemy artillery barrage became fiercer and fiercer, and the company area was riddled with craters like a bee's nest. The enemy artillery stopped at 1500, and then we suffered from the rain leaking into the fox hole.

18 January 1943

About 7 o'clock, a messenger came from the Nachi Company and said that there would be a meeting of unit leaders. I should like to make a suggestion, but the battalion commander would probably not make use of it. Sergeant Major Mori gave his opinion on some communication matters. I became angry and told him to just do his own duties. In the evening, the battalion commander came to inspect the company, so I expressed the opinions of all of us to him at that time. He told us not to worry because everything would be all right.

19 January 1943

[The contents of] Ant nests are good to eat when one is starving. I received some meat from battalion headquarters. My orderly is sick, so I had to cook it myself. Enemy artillery began to fire about 1100, and there was an enemy attack in front of the 8th Company about 1300. We fired on them with light machinegun, and I believe they got a surprise.

Approximately 37,000 Japanese ground troops died on Guadalcanal; 9,000 of these casualties were noncombat deaths caused by malaria, dengue fever, and starvation. The victory was in logistics: The Japanese could not compete with American logistics. For example, both sides lost 26 warships with nearly equal tonnage. The Japanese would never be able to replace their losses, while the productive arsenals of America were providing materiel for the allies while at the same time supplying their own armed forces.

What is fascinating in these journals is reading how the Japanese infantrymen on Guadalcanal were affected on all levels by poor logistics, in everything from their ability to patrol to strains in relationships between ranks.

19 January 1943

I felt very dazed and only semiconscious because of my empty stomach. At 1330, I prepared my equipment to put it in my haversack so that it can be packed on a moment's notice. It will be so heavy that I don't know whether I'll be able to carry it or not, because of my run-down condition . . . Only my spirit keeps me going.

This was the NCO's final entry. The Japanese began evacuating Guadalcanal on 31 January and completed their withdrawal by 7 February.

Master Sergeant John Blair, USAR, is the NCO in charge of the Corps Liaison Team (Forward), Readiness Operations Division, 55th Materiel Management Center, at Fort Belvoir, Virginia.

Simulating Army National Guard Logistics

by Major Christopher D. Hardin, TNARNG,
and Lieutenant Colonel Mike Johnson, TNARNG

In a computer-based training exercise for National Guard units, soldiers learn how to manage logistics for an armored cavalry regiment.

Last year, the 278th Armored Cavalry Regiment (ACR) of the Tennessee Army National Guard conducted Operation Virtuals, a computer-based logistics simulation exercise. This exercise focused on the entire logistics system that supports an ACR from troop to corps level.

The regiment's challenge was to develop a training exercise that allowed supporting elements from Alabama, Kentucky, and Ohio to participate with 278th ACR units, which are located throughout the state of Tennessee. The solution was to use a computer-based simulation that would duplicate the ACR's area of operations and represent all associated support and combat units. The objective was to present a bleak logistics picture that would require the staff to enforce priority of support and ensure the commander's intent was followed while rebuilding combat power.

Janus

The regiment developed a computer-based simulation using the Janus combat simulation computer system. Janus replicated, in real time, the movements occurring on the battlefield during an exercise. It simulated inoperative vehicles; soldiers wounded in action; soldiers killed in action; transportation support; classes I (subsistence), III (petroleum, oils, and lubricants [POL]), and V (ammunition) resupply; aerial resupply; and medical and maintenance evacuation. After careful planning, the Janus system successfully simulated the logistics functions on the battlefield with minor limitations and great flexibility.

Planning Phase

Time is always a factor when planning a training ex-

ercise for the National Guard. The planners' first decision was to build upon other training events to make maximal use of available training time. Operation Virtuals took 5 months to plan and coordinate and was built on two primary training events. The regiment used an operation order produced at the Leaders Training Program at the National Training Center at Fort Irwin, California, and then fought a regimental battle focusing on the artillery battlefield operating system. The regiment then used the end of that battle, which was fought in the Janus simulation, to set the stage for the regeneration operation to serve as the logistics exercise.

The scenario was set for the regiment to undergo a regeneration of combat power from a 50-percent readiness rate to a 70-percent readiness rate within 24 hours and in time for the next mission. Combining the Janus simulation and the regeneration operation linked all the training events together and maximized the training time for the regiment.

Observer-Controller/Trainers

Observer-controller/trainers (OC/Ts) controlled the exercise. Each OC/T had to cover his assigned section by ensuring that the unit conducted training and that it was carried out according to Army standards. They initiated events and ensured that the units completed missions on time and that any needed retraining occurred.

It took 57 OC/Ts to cover the regiment from troop level through corps level. Their specialties ranged from combat to combat support to combat service support.

Mission Events List

The controlling document for the exercise was a mission events list (MEL). This list served as a master docu-

ment for the OC/Ts to follow during the exercise. The MEL also provided vehicle bumper numbers for the troops and the maintenance system to use in tracking vehicles. A node number allowed for crosstracking in the Janus system. Each event had a notes section that allowed for a description, such as a maintenance fault or a wounded-in-action injury.

ACR Support Structure

In the ACR, support begins at the troop level with the first sergeant and the combat trains. The first sergeant normally supports his troop with maintenance and medical assets forward. Next, squadron assets are arrayed for support. Each squadron has a maintenance platoon, medical platoon, and support platoon. The maintenance platoons work at the unit maintenance collection point (UMCP). The medical platoons establish squadron aid stations to provide medical support. The support platoons are located in the regimental support area and represent the field trains. The headquarters troop executive officer controls these platoons.

The regimental support squadron's assets include a supply and transport troop, a direct support maintenance troop, and a medical company. The corps provides support through a corps support battalion that is tailored to support the mission of an ACR. The exercise simulated all of these support elements.

Command and Control

A control cell kept track of MEL execution and monitored the status of the exercise. The control cell introduced certain events into the scenario and provided administrative assistance to the OC/Ts when needed. This cell also controlled all communications for the exercise, to include conducting a net call with all OC/Ts each day to provide an updated picture of the operation and the resupply effort.

Command and Control of Logistics Assets

A headquarters element controlled each support element. These headquarters elements set up their command posts in field conditions to control the movement of their assets during the simulation.

The combat trains command post controlled the maintenance and medical assets at squadron level. It directed the maintenance and medical support that was required during the mission and ensured that assets were allocated according to the priority of support.

The regimental logistics operations center controlled the regimental assets that provided support to each squadron. The regimental materiel management center managed all classes of supply and conducted logistics estimates. The corps support battalion (CSB) support op-

erations cell managed the CSB assets in support of the regiment's resupply priorities.

Maintenance

The fix function of logistics allowed the units to train on battlefield maintenance flow from troop level through corps level. Janus provided inoperable vehicles either at the start of the exercise or at any time an OC/T required one. Each vehicle had a Department of the Army Form 5988E, Equipment Maintenance Worksheet, indicating its fault. The first sergeant of each troop received the 5988E and passed the information on to his maintenance sergeant located in the UMCP area. Once the maintenance sergeant determined the priority of recovery, the first sergeant decided whether to fix the vehicle forward or dispatch an M88 recovery vehicle to move the vehicle to a UMCP for repair.

At the UMCP, the Unit Level Logistics System-Ground (ULLS-G) clerk entered the identifying data on the part requested on the 5988E into the system. He then sent the request via signal encryption node to the Regimental Support Squadron B Troop (Maintenance) class IX (repair parts) section for issue. If the part was not on hand at the regimental support squadron level, the request was sent to the corps level for resupply. The support operations cell then coordinated for the part to be sent to the unit by logistics package (LOGPAC) resupply. If the part was high priority, the regiment could use aerial resupply. When the part arrived at the UMCP, the OC/T then allotted the time listed in the maintenance allocation chart to repair the vehicle.

Maintenance nodes and functions replicated during the exercise included the UMCP, class IX and shop operations, and vehicle recovery. Using the Janus computer, the unit's vehicle and prescribed load list data were entered into the computers according to the task force organization.

Each vehicle was added individually to preclude home-station faults caused by projecting uncontrolled data. Each unit's database was loaded onto the Janus computers to allow them to be used as ULLS-G computers during the exercise. The units could leave their ULLS-G computers at their home stations to avoid corrupting unit operations data. The ULLS-G operator for each unit performed all of his basic functions by ordering and receiving the status of parts. This provided valuable training on ULLS-G operations during the exercise.

The Regimental Support Squadron B Troop (Maintenance) provided repair parts for the exercise. The 115th Signal Unit provided signal encryption node support that allowed the UMCP to send data via mobile subscriber equipment to the class IX warehouse during

the exercise.

The ULLS operators requested parts and received updated status of parts throughout the exercise. When the system registered a status code of “BA,” the clerk knew that a part was issued and ready for pickup at the class IX warehouse in the regimental support area. The squadron motor officer or squadron motor sergeant sent the part to the UMCP. When the part arrived at the UMCP, the UMCP allowed the time designated on the maintenance allocation chart to pass. After that, the deadlined vehicle became fully mission capable and was reported as available combat power.

The class IX warehouse forwarded requests for 02-priority parts that it did not have on hand to the materiel management center, which queried the CSB. If the 02-priority part was available at the CSB, the support operations cell coordinated pickup and delivery. Air resupply was the primary transportation mode for high-priority parts, with direct delivery to the respective UMCPs.

Once the support assets were laid out on the Janus battlefield and the required support information provided, the vehicle repair function of logistics was put to the test.

Aviation Support

To exercise the aviation unit maintenance (AVUM) troop, several MEL events were initiated to simulate a wide variety of helicopter maintenance situations, ranging from minor component malfunctions to major battle damage. Based on these events, the AVUM production control (PC) officer entered the data needed to track and report aircraft status into ULLS-Aviation (ULLS-A) and then initiated actions to recover and repair the affected aircraft.

To deal with minor component problems, the helicopter was flown back to either the maintenance troop area or the aviation intermediate maintenance (AVIM) company area. For more serious problems such as severe battle damage, downed aircraft recovery teams went to the site to slingload the helicopter back to the designated maintenance facility.

The ULLS-A clerk recorded aircraft faults, generated internal unit and AVIM work orders, and ordered repair parts from the AVIM company. The OC/Ts simulated the AVIM operation and gave the AVUM PC officer the status of each part requested and the maintenance status of each work order submitted. The AVUM PC officer used this information to continuously update the information in his ULLS-A computer and generate reports for higher headquarters on current aircraft status.

The class III/V platoon initiated MEL events that simulated supplying POL to aviation assets on the

battlefield. The platoon leader maintained the status of supplies on hand and predicted their use based on the number and type of aircraft participating in missions. The class III/V platoon also was given equipment maintenance scenarios requiring vehicle recovery and maintenance. The platoon used ULLS-G maintenance and reporting procedures to track the status of damaged equipment.

The class III/V platoon also practiced forward area resupply point (FARP) operations by establishing multiple FARPs to resupply aircraft. To support an assortment of aviation missions, these FARPs varied in size, location, and time of operation.

Casualty Evacuation

The medical platoon leader set up an aid station to treat and account for wounded soldiers and to evacuate them when needed. The medical platoon executed MEL events that evaluated its reporting procedures as well as its coordination with higher headquarters. The platoon established primary and alternate casualty evacuation routes and initiated medical resupply transactions. The platoon also had to move the aid station to minimize damage from enemy artillery attack.

The medical platoon's focus was on sorting casualties for evacuation and tracking and reporting them from levels I through III (battlefield through hospital) care. Medical personnel within the regiment not only worked within individual elements, but also saw the relationships among, and the importance of, each level of care.

The exercise gave the medical platoon and first sergeants the opportunity to see mass casualties on the battlefield, where they were forced to decide rationally which casualty to evacuate first and by what means. The first sergeant was given casualty feeder cards in triplicate for each injured soldier in his troop. He sorted and prioritized the cards as urgent, priority, or routine and then ordered assets forward to evacuate the wounded soldiers. This part of the process was critical because it had to be completed according to the strict timeline laid out in Field Manual (FM) 8-10-1, Tactics, Techniques, and Procedures for the Medical Company, and FM 8-10-6, Medical Evacuation in a Theater of Operations Tactics, Techniques, and Procedures. The MELs dictated whether the casualty received buddy aid, combat lifesaver aid, or treatment by a medic.

Who treats the casualty and when are different for each category of evacuation. Once given proper care at the point of injury by a level I care giver (buddy aid, combat lifesaver, or medic), the casualty was evacuated to level II care. This was a critical part of the training, since the greatest loss of life usually occurs during this timeframe.

The first sergeant kept one copy of the casualty feeder card. The other two copies went with the ambulance crew. The ambulance crew gave one copy to the unit's combat trains command post. The final copy remained with the casualty at level II care. If the casualty required a higher level of care, the casualty feeder card went with the casualty to the corps medical facility.

Each level I and II aid station kept a daily disposition log that was sent to the squadron S1. When a casualty needed care beyond level II, this log was especially useful because the level II caregiver did not have a casualty feeder card on hand to reference since the third copy must remain with the casualty. The OC/T closely monitored casualty evacuation, and when timelines were not met, the "wounded in action" became "died of wounds." The high degree of coordination involved in executing an evacuation mission was a key training aspect.

Fuel Supply

In continuous operations, an ACR on the move can consume more than 80,000 gallons of fuel a day. The regiment used the regimental materiel management center to forecast requirements and request pushes from the CSB. The CSB used tankers to transfer fuel to the supply and transport troop, and the support platoon pushed class III resupply to the squadrons by LOGPAC.

Ammunition Supply

The regiment had to rearm during the exercise. To do this, it replicated the class V supply system. The regimental materiel management center projected required class V pushes to the CSB. The CSB then coordinated for class V pickups at the ammunition supply point, which was replicated in Janus with over 100 pallets of direct and indirect ammunition. The regiment activated an ammunition transfer point and coordinated with the corps to transfer ammunition on the support squadron's vehicles. The support squadron then pushed the class V supplies to the squadron by LOGPAC resupply.

A bigger challenge to class V resupply was supporting the 3/155th Direct Support Artillery Battalion, which consumed most of the artillery resupply for the regiment. The regiment was forced not only to run an internal ammunition transfer point but also to request a corps-controlled ammunition transfer point for the artillery. This replication went very well because the Janus system runs in a real-time setting.

Sustainment

The regiment also coordinated for the resupply of class I. The class I supplies were requested by the units and pushed to them by the support platoons. The resupply of class I occurred through CSB and regimen-

tal support squadron pushes. Ice also was simulated in the movement because of its importance in resupply.

Movement

Planning for the use of all transportation assets within the regiment was a critical factor during the exercise. The real-time movement produced by Janus replicated the great distance and time that support units must cover during their missions. The regimental support operations officer had to plan and coordinate with the CSB constantly to ensure that units linked up at the correct time and that supplies were delivered on time. Priority of support was a key factor in determining which units received transportation support.

Operation Virtuals presented the first opportunity for the 278th ACR to use all logistics assets, from the troop through corps, in a training environment. It allowed the regiment to see the complex nature of resupplying an entire ACR on the ground using a National Training Center scenario. Although limitations within Janus created certain challenges, the regiment overcame them easily. All regimental units participated and identified problems to be corrected before an actual National Training Center rotation or a real-world deployment. Each unit within the regiment also was able to put standing operating procedures to the test in a training environment, identify problem areas, and update the procedures as needed. Although it took a great deal of coordination to put together an event of this magnitude, the exercise proved to be an invaluable tool for training the 278th ACR.

ALOG

Major Christopher D. Hardin, TNARNG, is the A Troop Trainer for the 2-409th Training Support Battalion, in direct support of the 278th Armored Cavalry Regiment. He has a bachelor's degree from East Tennessee State University and a master's degree from the University of Oklahoma. He is a graduate of the Armor Officer Basic Course and the Combined Logistics Officers Advanced Course.

Lieutenant Colonel Mike Johnson, TNARNG, is the Commander of the 2-409th Training Support Battalion, in direct support to the 278th Armored Cavalry Regiment. He has a bachelor's degree from East Tennessee State University and a master's degree from Webster University. He is a graduate of the Armor Officer Basic and Advanced Courses, the Army Command and General Staff College, and the Armed Forces Staff College.



Word Search Puzzle

Important logistics words appearing in this issue of *Army Logistician* are hidden in the puzzle below. The words are printed horizontally, vertically, and diagonally. See if you can find and circle all of the words in the puzzle—

T D T K E S H E L S K N J D N J Y H X A U L Q Y S
 J R J P U W S H C F O M T I L I U F U I A E T L U
 T Z A P I I I I W I L E A D E R S H I P L I B A B
 C E P N C H T E T Y G J I I I C L I S B L R N N S
 N L C R S S S I S U S T A I N M E N T I I E O O I
 Y O E H I P S R S F W H N P A T O K B E E T I I S
 V X I G N I O T E H W T O F A I E A A R S A T T T
 E Q O T U O A R O N E Q G A T N R N A W T M I A E
 I L R Q I F L L T R T H A A O E L E A N S X L R N
 E N C W F N E O N A A R V W P T R T A N C C A E C
 V A V N W S U A G N T I A O Q R X Q C J C M O P E
 A C R E A X T M I Y R I R P Q A T N I O J E C O A
 C O O L N I F S M P F E O L A N A C L A D A U G S
 U R E T O T T R A A T S F N C S M T U I P N D G T
 A P G N A A O U O N F L V J E F I N T H E A T E R
 T S A X N N O R I T R L J O L O Y E S W A G E F A
 I L Y W L O P W Y Q C U O G T R J M C U K G Z Q T
 O N O I T A L U M I S A B U T M B Y Q R P N I N E
 N L A C I T C A T D L W R N A A P O A B O P V S G
 A P C W Z U S X Q V Z I B T B T K L C K J F O Y I
 M S I R O R R E T I T N A T N I O P A C G O L R C
 A R E A E A A S W S E I O T B O D E M A F I C S T
 R E S P O N S E S Z S P A A E N C D K O R E A B O
 J J V B T Y I J R F E X M B M R B M T L N Q Z Y S
 E I H R M X I P R D C O M M U N I C A T I O N S U

acquisition
 Afghanistan
 allies
 ammunition
 antiterrorism
 area
 battle
 coalition
 communications
 contractor

corps
 deployment
 depot
 evacuation
 exercise
 Guadalcanal
 international
 interoperability
 intheater
 inventory

Japan
 joint
 Korea
 leadership
 LOGCAP
 logistics
 maintenance
 materiel
 NATO
 operational

partnership
 privations
 rear
 response
 retail
 simulation
 SSF
 staff
 strategic
 subsistence

supply
 support
 sustainment
 tactical
 technology
 transformation
 transportation
 TSC
 ULLS
 wholesale



NEWS

(News continued from page 1)

enzymes that DeFrank said he would like to add to the powder formulation he calls the "Edgewood Enzymatic Decon System." One of the enzymes would neutralize the VX-type nerve agent. Another would counteract sulfur mustard, an oily chemical known as "mustard gas" during World War I. Other enzymes could neutralize biological agents such as anthrax, the plague, and tularemia.

Edgewood is now exploring licensing agreements with foam manufacturers and research and development firms to make the technology available for commercial use. DeFrank said a powder formulation that can neutralize some agents should be ready for commercial production in less than a year.

The Edgewood team already has produced a limited quantity of the organo phosphorous acid anhydrolase enzyme in the laboratory. DeFrank said the Edgewood process engineering facility has a fermentation capacity for up to 1,000 liters, which can generate 1 pound of enzyme, or enough to make about 1,300 gallons of decontaminant.

ARMY AWARDS LOGCAP III CONTRACT

In December, the Army Operations Support Command, a major subordinate command of the Army Materiel Command, awarded the Army Logistics Civil Augmentation Program (LOGCAP) III contract to Halliburton Kellogg Brown & Root (KBR) Government Operations division. Halliburton KBR formerly was known as Brown & Root Services.

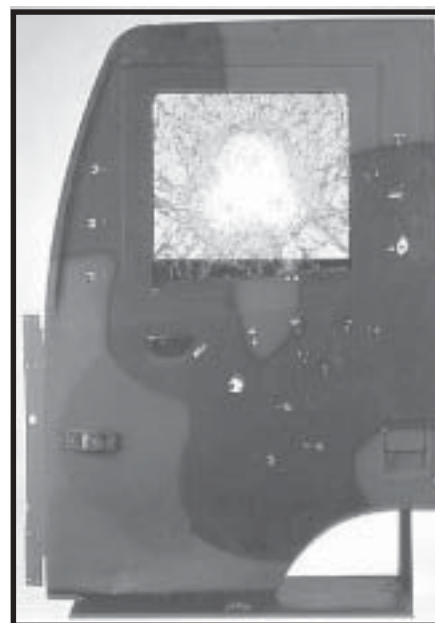
The Army established LOGCAP to fulfill the Department of Defense's global mission during contingency events. It uses a civilian contractor to provide support and augment the logistics requirements of deployed U.S. forces rapidly.

Brown & Root Services was the original LOGCAP contractor and supported contingency events from 1992 to 1997 in locations ranging from Somalia to Haiti to the Balkans. When the mission of U.S. forces in the Balkans progressed into a sustainment phase in 1997, U.S. Army Europe maintained continuity of services by awarding Brown & Root the Balkans support contract (LOGCAP II).

LOGCAP III is a 10-year task-order contract with a 1-year base period and nine 1-year options. The contract requires Halliburton KBR to deploy within 72 hours of notification and to deliver combat support and combat service support for 25,000 troops within 15 days. Halliburton KBR must be ready to furnish these services 24 hours a day, 7 days a week, 365 days a year under any condition and at any location around the globe. By working with the Army planners, Halliburton KBR will provide for the construction of base camps and their infrastructures, including billeting and dining facilities; food preparation, potable water, and sanitation systems; showers; laundries; transportation; utilities; warehouses; and other logistics support. Also included is support of the reception, staging, onward movement, and integration process for U.S. forces as they enter or depart theaters of operations by sea, air, or rail.

ARMORED FMTV CAB ON THE DRAWING BOARD

Stewart & Stevenson Tactical Vehicle Systems, LP (TVS), and O'Gara-Hess & Eisenhardt Armoring



□ Although numerous rounds of 7.62-millimeter M80 ammunition were shot at this door, none entered the FMTV cab.

Company (OHE), a subsidiary of Armor Holdings, Inc., will develop an armored cab for the Army's family of medium tactical vehicles (FMTV). The companies are working together to develop the enhanced armoring and blast specifications for the FMTV; TVS will be the prime contractor for the effort.

An earlier effort by the two companies produced an armored FMTV door capable of deflecting 7.62-millimeter M80 rounds. In a test conducted by the University of Dayton Research Institute's ballistics laboratory, numerous rounds were fired at an FMTV cab door. Neither the door nor its glass was penetrated. Now TVS and OHE will expand FMTV armoring capabilities further to include ballistic and mine protection. The armored FMTV cab will meet the interim brigade combat team requirement of protecting the force while still being transportable on C-130 aircraft and helicopters.

Up-armored M1114 high-mobility, multipurpose, wheeled vehicles with OHE technology have been effective in protecting and saving lives of U.S. soldiers in Bosnia and Kosovo. The expanding applications of the FMTV convinced Stewart & Stevenson that a crew-protected FMTV cab likewise would prove essential to saving soldiers' lives while they execute their missions.

CHEMICAL DISPOSAL REORGANIZED

Responsibility for management and oversight of the Army's Chemical Weapons Disposal Program has been consolidated under the Assistant Secretary of the Army for Installations and Environment. Previously, responsibility for the program was divided between the Assistant Secretary of the Army for Acquisition, Logistics, and Technology, who exercised overall management of the program, and the Assistant Secretary for Installations and Environment, who provided policy and oversight for environmental, safety, occupational health, and chemical stockpile emergency preparedness matters.

Direct management of the program will remain under the Program Manager for Chemical Demilitarization, headquartered at Aberdeen Proving Ground, Maryland. The program manager is responsible for disposing of the entire U.S. stockpile of chemical agents and munitions. So far, chemical disposal facilities at Johnston Atoll and Tooele, Utah, have destroyed 24 percent of the stockpile. Disposal facilities at Anniston, Alabama, and Umatilla, Oregon, have been completed and are undergoing final checks; facilities at Edgewood, Maryland; Newport, Indiana; and Pine Bluff, Arkansas, are under construction.

CCAD CONTRACT WILL IMPROVE ASSET VISIBILITY

In October, the Army awarded a \$5.8 million contract to Savi Technology, Inc., for a system that will identify and locate over 250,000 repair parts and 3,000 pieces of ground support equipment that are used in rebuilding and overhauling Army aircraft at Corpus Christi Army Depot (CCAD), Texas. The system is built around the Savi SmartChain™ platform and Savi asset management application software that integrates web-based software applications and wireless tracking and data-collection technologies.

The Savi asset management solution provides complete location visibility in real time for all mechanical parts and subassemblies being repaired in the CCAD aviation maintenance facility. With automated tracking and maintenance, it will be possible to reduce operating costs and repair cycle times, improve record keeping, and improve overall service quality.

The multiyear contract was awarded through the Army Logistics Integration Agency, which worked with Savi Technology, RF Code, Inc., and the information technology and maintenance staffs at CCAD to design and implement the system.

The Savi asset management solution requires no change in CCAD's workflow for equipment maintenance. For example, when a helicopter engine is disassembled for inspection and maintenance, each part is marked with a printed bar code and an associated radio frequency (RF) tracking tag. As the part moves through the various shops, the RF tracking tag periodically emits a signal that is detected by RF readers mounted overhead. System users then can use a web-based interface to access information on all parts in the work process.

After using the Savi solution to locate a particular item, users can key in a request for a worker on the floor to move that item. Workers then can download instructions to handheld computers with mobile RF readers. Using these devices, workers can establish an item's location to within a 10-foot radius and move the item to the desired location.

ARMY PRESENTS DEPLOYMENT EXCELLENCE AWARDS

In December, the Army recognized units that strived for excellence when deploying soldiers and equipment by air, land, or sea with the first presentation of the Chief of Staff of the Army Deployment Excellence Awards.

The awards were established to recognize units and installations for outstanding deployment accomplishments that meet or exceed established standards.

The awards were presented to Active Army, Army National Guard, and Army Reserve units for specific deployments completed during fiscal year 2001. Units receiving awards were—

Active installation: Fort Sill, Oklahoma, for deployment to Kuwait in support of Operation Desert Spring.

Active large unit: 3d Squadron, 4th Cavalry Regiment, 25th Infantry Division (Light), Wheeler Army Airfield, Hawaii, for deployment to El Centro, California, in support of the Joint Task Force 6 Readiness Exercise.

Active small unit: 235th Signal Company, Fort Gordon, Georgia, for deployment to Haiti in support of Operation Justinien Cause.

Active supporting unit: 266th Transportation Detachment, 24th Infantry Division, Fort Riley, Kansas, for deployment to the National Training Center, Fort Irwin, California.

Army National Guard large unit: 76th Infantry Brigade, Indianapolis, Indiana, for deployment to the Joint Readiness Training Center, Fort Polk, Louisiana, for the brigade's rotation exercise.

Army National Guard small unit: Task Force Alpha, 1st Battalion, 133d Infantry Regiment, Waterloo,

Iowa, for deployment to Saudi Arabia and Kuwait as a security task force.

Army National Guard supporting unit: State Area Command, Indianapolis, Indiana, for providing full logistics support during a deployment to North Fort Polk, Louisiana.

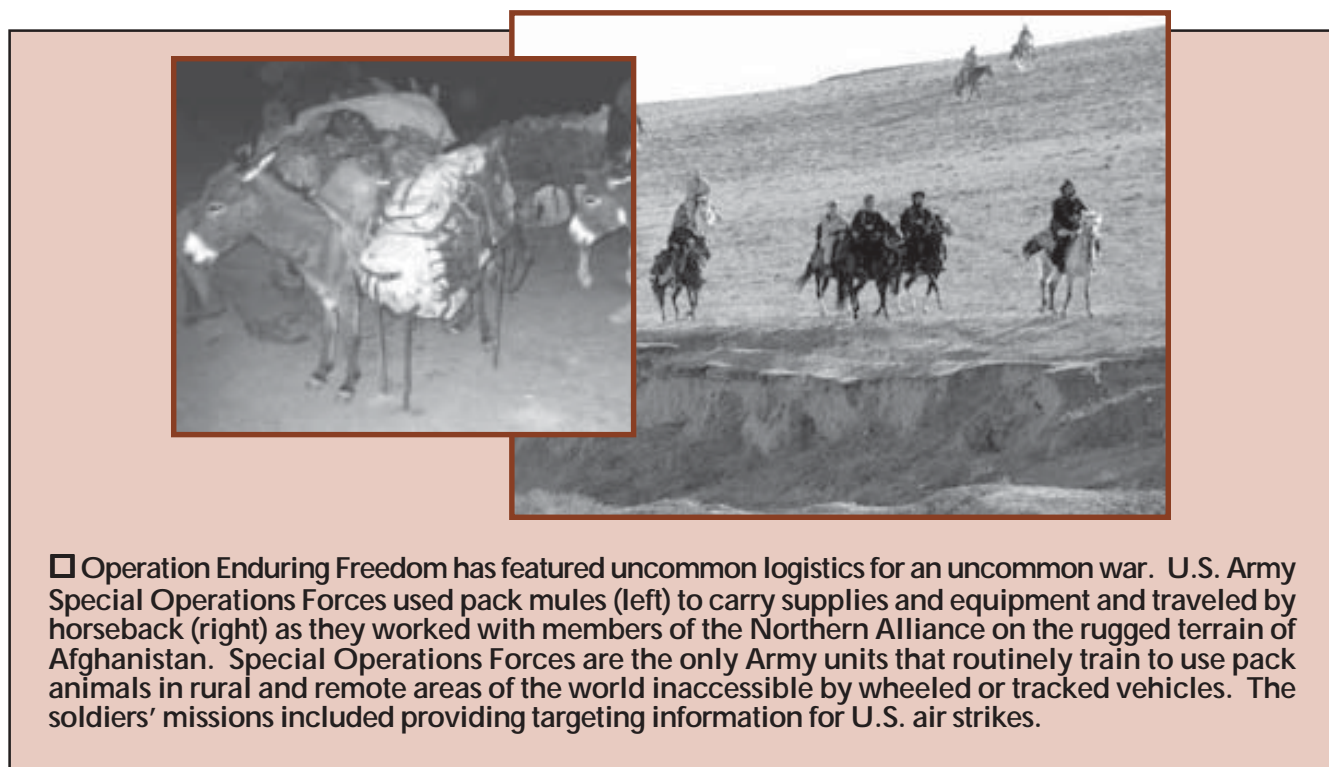
Army Reserve supporting unit: 1395th Transportation Terminal Brigade, Seattle, Washington, for its support of Operation Puget Thunder at the Port of Tacoma, Washington.

MULTIPURPOSE RATIONS DEVELOPED

Two special-purpose combat rations developed by the Department of Defense Combat Feeding Program at the Army Soldier Systems Center (Natick) have been merged into a single product called the meal, cold weather/long range patrol (MCW/LRP).

The new item streamlines production and provides greater operational flexibility compared to the ration, cold weather, used by soldiers in frigid climates and the food packet, long-range patrol, consumed by Special Operations Forces (SOF).

Soldiers who work and live in extreme cold need rations that supply extra calories and nutrition. Soldiers who are part of SOF need rations in a lightweight, low-volume package. The same meals are used for both the



□ Operation Enduring Freedom has featured uncommon logistics for an uncommon war. U.S. Army Special Operations Forces used pack mules (left) to carry supplies and equipment and traveled by horseback (right) as they worked with members of the Northern Alliance on the rugged terrain of Afghanistan. Special Operations Forces are the only Army units that routinely train to use pack animals in rural and remote areas of the world inaccessible by wheeled or tracked vehicles. The soldiers' missions included providing targeting information for U.S. air strikes.

MCW and the LRP but have these differences: Three MCW food packets totaling 4,520 calories a day meets the caloric requirements for a cold-weather operational ration. The LRP food packet comes in one tan bag and totals 1,540 calories a day to meet the low weight and volume requirements of SOF.

The MCW/LRP expands the variety of combat rations menus to 12. The MCW/LRPs are freeze-dried, which means low weight and low moisture. This practically eliminates the possibility of freezing. The food can be eaten as is, or, if hydration is preferred, soldiers can pour water directly into the brick-shaped pouches holding the food. Other important features of the ration are reduced sodium and protein levels. Studies indicate that lowering sodium and protein intake reduces the body's need for water.

Future changes to the MCW/LRP may include switching to a single pale-green color for easier procurement, standard use of a peel-open seal for the entrée, and replacement of current components with products that have a longer shelf life.

NATO CLASSIFICATION SYSTEM GUIDE AVAILABLE

The Defense Logistics Information Service is offering a booklet that describes the NATO [North Atlantic Treaty Organization] Codification System (NCS). The *Guide to the NATO Classification System* was developed by the NATO Group of National Directors on Codification.

The NCS is based on the U.S. military cataloging system and contains data on 16 million stock numbers, 31 million part numbers, and 910,000 manufacturers and vendors. It provides a common language for identifying equipment, parts, and supplies for NATO nations and 27 other nations that have adopted the NCS.

A copy of the guide can be accessed electronically on the Internet at http://www.nato.int/structur/AC/135/ncs_guide/e_guide.htm. A free printed copy can be obtained by calling (616) 969-3029; sending an e-mail to ledwards@dlis.dla.mil; or writing to Defense Logistics Information Service, ATTN: DLIS-KI (Lauri Edwards), 74 Washington Avenue North, Suite 7, Battle Creek, MI 49017-3804.

HANDHELD MINE DETECTOR DEVELOPED

The Army has contracted with CyTerra Corporation of Waltham, Massachusetts, to modify and produce its

handheld standoff mine detection system to meet Army requirements. The handheld mine detector is designed to allow soldiers to detect all types of antitank and anti-personnel mines quickly and accurately.

The new system will use ground-penetrating radar in conjunction with improved metal detection technology. This will increase mine-detection accuracy by filtering out trash metal such as shrapnel and bullet casings and by detecting mines encased in nonmetal substances such as plastic. In tests at Aberdeen Proving Ground, Maryland, that included nonmetallic mines, the new mine detector was over 96-percent effective, compared to 74-percent effectiveness of the current detector. After using the current mine detector for about 20 minutes, an operator becomes temporarily tone deaf. With the new system, the audio tones used to alert soldiers of landmines are gentler on the ears, allowing the soldier to work up to 30 minutes.

Design modifications to be completed include making the device more durable, more rugged, and about 7 pounds in weight. The handheld detectors should cost about \$10,000 each and should be ready for distribution by 2005.

FORCE PROJECTION SYMPOSIUM SCHEDULED

The third annual Force Projection Symposium will be held 7 to 8 May 2002 at the Williamsburg Marriott in Williamsburg, Virginia. The symposium is sponsored by the Project Manager for Force Projection and the Program Executive Office for Combat Support and Combat Service Support in partnership with the National Defense Industrial Association, Michigan Chapter. The theme of this year's symposium will be "Intratheater Transportation and Distribution." The featured exhibit will be the *Joint Venture*, a 96-meter, high-speed sealift catamaran (HSV-XI). To receive a registration form or to obtain more information, send an email to FPSymposium@mindspring.com or call (586) 445-2041.

NAPA CONTRACT EXTENDED TO EUROPE

The Defense Logistics Agency's partnership with the National Automotive Parts Association, better known as NAPA, has been expanded to include Department of Defense agencies in Europe. Motor pools and Government fleet managers registered for the program can get 20 to 50 percent off the list price of automotive parts and, by using their Government credit cards to buy the



□ A 758th Maintenance Company senior mechanic at the Army Reserve Center in Whitehall, Ohio, prepares to install a NAPA-supplied filter in a high-mobility, multipurpose, wheeled vehicle.

parts, can enjoy the added convenience of “cash-and-carry” purchasing. Time and cost savings come from the elimination of repetitive processing of solicitations, quotes, and awards.

Defense Supply Center, Columbus, Ohio (DSCC), serves as the link between NAPA and the Department of Defense and other Government agencies in Europe. As such, DSSCC provides cross-referencing and identification of parts; expert technical advice; commercial warranties; shipments via APO, air freight, courier, and ocean freight; and a special ordering process.

The specific NAPA dealer processing Europe orders is D&M Auto Parts in Hicksville, New York. Customers can place orders by phone ([516] 822-6662), fax ([516] 822-5020), or e-mail (info@dmauto.com). Parts also can be ordered on the D&M web site at <http://www.dmauto.com>.

For information on the continental United States program, see “Auto Parts at a Discount” in the January-February 2000 issue of *Army Logistician*.

SOLDIERS TO GET HELP WITH RESEARCH

Soldiers in professional development courses soon will be given a CD-ROM-compatible “E-Card” to help

them with research projects.

When the card is inserted into a computer’s CD-ROM drive, it will show automatically links to military web sites and other distance-learning resources. When the soldier clicks on the name of a web site, the connection is made.

The cards will be given to soldiers attending courses on levels above basic training and advanced individual training. If web site links are added to or deleted from the system, the card will be updated automatically when it is inserted into a computer CD-ROM drive. Soldiers enrolled in the Army University Access Online, or eArmyU, are issued computers with the information on the E-Card already loaded.

NEW VESTS PROMISE HEAT RELIEF TO AIRCREWS

Beginning in fiscal year 2003, the aircrews of some Army helicopters will have microclimate cooling systems to help lower body heat generated in their multi-layered flight suits. The Microclimate Cooling Subsystem (MCS) is being developed for the Air Warrior program by the Chemical Technology Team at the Army Soldier Systems Center (Natick) and Foster-Miller, Inc., in Waltham, Massachusetts. The Air Warrior MCS is based on previous work conducted at Natick, including the Advanced Lightweight Microclimate Cooling System developed in 1998.

The MCS consists of a small refrigeration unit and a tube-type cooling vest. The vest is lined with small-diameter, flexible tubing and worn by aircrew members under their protective clothing. External supply and return tubing connects the vest to a refrigeration unit, which is mounted on the aircraft. The connector on the vest has a quick-release and hands-free breakaway capability for easy evacuation. The refrigeration unit chills water and pumps it through the supply line and into the vest. Body heat is transferred to the water and flows back through the return line to the unit, where heat is exchanged with the cooled ambient temperature. Rechilled water then is recirculated back into the cooling vest.

Crews of Black Hawk, Chinook, and Kiowa helicopters will receive the new vests to complement the refrigeration units that will be located inside the aircraft. The cooling system will improve safety by reducing the rate at which core body temperature rises. Other benefits to the wearer include increased stamina, reduced sweating, and lower water-replacement needs. Weight

is still a factor, however, so engineers will continue efforts to produce an even lighter weight personal cooler.

ONLINE LOGISTICS BIBLIOGRAPHY AVAILABLE

SOLE—The International Society of Logistics—offers on its web site (<http://www.sole.org/bibliography.asp>) an extensive bibliography of literature on logistics and logistics-related areas. Subjects include—

- Logistics, logistics engineering, and integrated logistics support.
- Systems, systems engineering, and systems analysis.
- Concurrent engineering.
- Software and computer-aided systems.
- Reliability engineering.
- Maintainability engineering and maintenance.
- Human factors and safety engineering.
- Production, manufacturing, quality, quality control, and quality assurance.

- Operations research and operations management.
- Engineering economy, life-cycle cost analysis, and cost estimation.

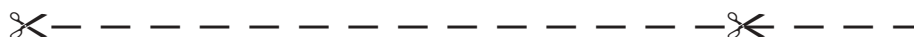
- Management and supporting areas.


Also included is a list of items selected from the larger list that have been identified and recommended as being key for those preparing for the Certified Professional Logistician (CPL) examination offered through SOLE.

FORT BELVOIR GETS ARMY MUSEUM

The Army has selected Fort Belvoir, Virginia, as the site of the long-planned National Museum of the United States Army. The Army has 61 museums and museum activities on installations around the world, but it is the only one of the armed services without a national museum. The museum, which is scheduled for completion in June 2009, will cost approximately \$90 million and will be funded privately through the Army Historical Foundation.

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